

Draft Lower Silver Creek Data Summary Report

Prepared for:

**US Environmental Protection Agency
Region 8**

*U.S. EPA Region 8 (EPR-SR)
1595 Wynkoop Street
Denver, CO 80202-1129
(303) 312-6101*

Prepared by:

Tetra Tech

*4900 Pearl East Circle Suite 300W
Boulder, Colorado 80304
(303) 447-1823
Fax (303) 447-1836
Tetra Tech Project No. 010379x*

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1.0 INTRODUCTION

The Lower Silver Creek drainage is currently under review by the U.S. Environmental Protection Agency (EPA) to determine possible clean-up actions aimed at addressing metal contamination resulting from historic mining practices. This Data Summary Report is a product of Phase I and Phase II activities in the Lower Silver Creek (LSC Site) corridor for the Silver Creek Load Reduction Alternatives Assessment. Tetra Tech is performing this work for the EPA under Contract Number 68-C-02-108.

Field activities occurred from August to December, 2007. Field activities included sampling surface soil, subsurface soil, groundwater and surface water. Subsurface sampling included borings and test pits, and the installation of piezometers at select locations. Field activities also included wetlands delineation and a geophysical survey.

The chemicals of concern (COCs) at the LSC Site include zinc, cadmium, lead, and arsenic. Phase I and Phase II resulted in a total of 280 surface soil samples, 134 subsurface soil samples, 22 groundwater samples and seven surface water samples. Results of these samples are discussed further in Section 4.

2.0 BACKGROUND INFORMATION

2.1 Site Location and Description

Silver Creek begins in the Wasatch Mountains above the town of Park City, Utah, and lies within the Weber River Basin in Summit County, Utah. The LSC Site is situated east of Highway 40, bounded by Highway 248 on its southern end and Interstate 80 to the north. It is located in Township 1 South Range 4 East, in Sections 10, 11, 15, 14, 22, 23, 27, 26, and 35, with approximately 500 feet occurring in Section 2 of Township 2 South Range 4 East. The LSC Site ranges in width from 2,100 feet at the southern boundary to 3,800 feet near Pivotal Promontory Road, encompassing approximately three square miles or 1,875 acres. The Rail Trail State Park runs north-south through the Site, paralleling the valley bottom between the floodplain and eastern rise. The Rail Trail is a former Union Pacific Railroad rail bed. The LSC Site includes the floodplain and riparian habitat and upland areas adjacent to Silver Creek. The region is currently undergoing significant development.

Silver Creek is fed by precipitation (snowmelt), groundwater, springs, and mine tunnel discharges near the headwaters. Silver Creek is classified for beneficial use Class 3A for protection of cold water fish and cold water species (UDEQ - DWQ, 2004). Water rights for domestic water, stock, irrigation, and recreation are held by public and private entities in Silver Creek. Portions of the LSC Site are flood irrigated, and the stream is impacted by irrigation runoff and groundwater return flows. Several irrigation ditches have been constructed in the basin. US Geological Survey (USGS) stream flow gauging station 10129900 is located within the LSC Site downstream of the Snyderville Water Reclamation Facility outfall.

2.2 Site History and Previous Investigations

Mining in the Park City area began around 1869. The first shipment of ore, 40 tons, was transported out by rail in July 1870 (UDEQ - DERR, 2002). As many as 10 mills operated along the banks of Silver Creek throughout the history of mining in Park City. Tailings from the mining operations were washed downstream and deposited in over-bank deposits in the floodplain throughout the LSC Site. Irrigation diversions may have spread the tailings and/or impacted Silver Creek waters to areas outside the floodplain. The Big Four Mill, located near the present Pivotal Promontory access road, was the primary mill operating within the LSC Site. The mill was erected to process the zinc-lead-silver tailings accumulated in the LSC flats (Williams, 1916). The Big Four was reportedly the third largest mill in Utah in 1916, consisting of a two-month stockpile of 50,000 tons of ore and the capacity to process 1,800 tons of ore tailings per day (UDEQ – DERR, 2002). The mine operated from 1915 to 1918. The Big Four tailings field was reportedly 3.5 miles long by 400 to 1,200 feet wide and two inches to eight feet deep. Today, the tailings exist in mounds, berms, and hummocks. There are two Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) listed sites upstream of the LSC Site, Richardson Flat and Empire Canyon.

The Utah Division of Water Quality (UDWQ) and USGS have monitored the LSC Site for over 13 years. Silver Creek is listed on Utah's 303(d) list as impaired with a high ranking due to elevated concentrations of zinc and cadmium. In 2004, UDWQ published a Total Maximum Daily Load (TMDL) report in which Silver Creek was listed as impaired by zinc and cadmium, which both exceeded their 4-day chronic aquatic-life standard (UDEQ – DWQ, 2004). Elevated metal concentrations in soils are also a concern. Lead and arsenic are the risk drivers for soil contamination. The UDEQ completed an Innovative Assessment in 2002 on the LSC Site;

based on elevated lead and arsenic concentrations, UDEQ recommended the LSC Site for CERCLIS listing.

The Lower Silver Creek project represents a joint EPA water and waste program. The initial TMDL assessment included gross (watershed-scale) load allocations and provided a summary of best management practices (BMPs) to reduce loading. Estimates for non-locationally-specific source control measures were nearly \$100 million. However, it was not the intent of the TMDL report to provide sufficient level of detail necessary to justify the expense of specific source reduction and remediation efforts. This report provides additional water quality and soils data and analysis to describe the nature and extent of mine waste and metals loading; a companion Tetra Tech modeling report provides insight into transport pathways under high flow conditions. The goal of Tetra Tech's work is to provide the information necessary to develop management options that maximize the efficiency (pollution reduction and cost) of restoration efforts in the watershed.

2.3 Waste Characteristics

Metals in LSC Site originate from sulfide mineral bearing ore deposits in the Park City Mining District. Some ores stem from skarn deposits hosted in carbonate rocks. Carbonate minerals also occur in intrusions as gangue minerals. Tailings from these ores should thus be abundant in sulfide and carbonate minerals (Utah Geological Society, 1968) and (USGS, 1989). Tailings material is distributed relatively uniformly across the majority of the floodplain area of the LSC Site and also exists in mounds, berms, and hummocks.

The chemicals of concern (COCs) at the LSC Site are zinc, cadmium, lead, and arsenic. The media affected by these contaminants are surface water, groundwater, sediment and soils. Contamination in these media could potentially affect ecological receptors (zinc, cadmium, and lead) and humans (lead and arsenic). TMDL reductions are required for surface water cadmium and zinc. The COCs in sediment and soil are lead and arsenic. Additionally, UDEQ issued a fish consumption advisory in October 2004 for trout caught in Silver Creek due to elevated levels of arsenic in these fish.

3.0 FIELD ACTIVITIES

3.1 Sampling Work Plan

A sampling work plan was developed by Tetra Tech and submitted to the EPA on August 6, 2007 for Phase I and Phase II investigation activities. Phase I activities included surface soil, subsurface soil and groundwater sampling along six transects of the Lower Silver Creek (LSC) area (Section 3.2). The initial scope of Phase II activities included additional XRF sampling, low flow surface water, sediment and groundwater sampling. Based on Phase I results, site conditions at the time of Phase II sampling, and discussions between Tetra Tech and EPA Region 8 representatives, a modified Phase II scope was developed which included additional surface soil sampling with laboratory metals analysis, test pit sampling, and groundwater sampling. The full surface water sampling and tracer studies were not conducted as Lower Silver Creek was not flowing at the time of the planned sampling activities. Limited surface water sampling was performed in late fall. Phase II activities are described in Section 3.3.

The sampling work plan was used with the companion Quality Assurance Project Plan (QAPP). The QAPP described the policy, organization, functional activities, and quality assurance and quality control protocols employed to verify that the data and measurements collected achieved the specified data quality objectives. The QAPP document was developed by the Utah Department of Environmental Quality, Division of Environmental Response and Remediation (UDEQ DERR) and approved by EPA Region 8 personnel.

Sampling was conducted on parcels within the LSC site where signed access agreements were obtained from property owners. Access agreements for parcels where sampling was allowed are provided in Appendix A.

3.2 Phase I Investigation

The Sampling Plan for Phase I proposed sampling along six transects spanning the study area located in the LSC watershed (Figures 5A & 5B). Two landforms were sampled across each transect, the floodplain area and the uplands area.

Sampling stations were to be located every 250 feet across the floodplain portion of each transect and every 500 feet in the uplands areas. At each transect, between two and twelve sample stations were identified within the floodplain area and between one and five sample stations were established in the uplands. A Geoprobe was used in the floodplain area to collect subsurface soil samples and to assess the thickness of tailings material. In areas where tailings were present, samples were collected from the tailings profile and from the material underlying the tailings, if practicable. The Geoprobe investigation was intended to help quantify the volume of tailings present. Soil samples were to be collected at upland locations from the 0- to 6-inch depth interval if tailings material was not visibly apparent. Boring Logs from the Geoprobe investigation are provided in Appendix B of this report. The floodplain and uplands sample locations were surveyed with a handheld GPS unit.

X-Ray Fluorescence (XRF) analysis was performed on soil samples to quantify soil metal concentrations for arsenic, cadmium, lead, and zinc. XRF analysis was performed in Colorado upon completion of sampling. Soil nutrient, paste pH, and organic analyses were performed by Colorado Analytical Laboratory on ten soil samples. Acid Base Accounting analyses were performed by ACZ Laboratories on ten soil samples.

Piezometers were installed at select Geoprobe boring locations to allow the measurement of groundwater levels and the collection of groundwater samples. Two to four one-inch diameter piezometers were installed on each transect to provide insight on the direction of groundwater flow and groundwater chemistry. Groundwater samples were analyzed for calcium, magnesium, sulfate and the dissolved metals aluminum, cadmium, iron, manganese, and zinc. Groundwater samples were also analyzed for iron speciation between the ferrous and ferric states. Piezometers were generally located within the floodplain area. Piezometer locations were surveyed by a professional surveyor.

A qualitative rhodamine dye tracer test was to be used to locate the main water course. Surface water sample locations for the low flow sampling event (Phase II) were to be assigned along the main water course based on the results of the rhodamine test. Stream geometry and flow measurements were to be made at select locations. However, because no flow was observed in the main channel during Phase I activities, this test was not performed.

The Sampling Plan for Phase I activities also included a wetlands delineation of the LSC Site. The wetlands delineation is discussed in Section 3.5.

3.2.1 Surface Soil Sampling

During the Phase I investigation, a total of 50 surface soil samples (0-6") were obtained from the locations along the six established transects identified on Figures 1A, 1B, and 1C. Each sample was analyzed for metals using XRF, as specified in the sampling plan. Fourteen samples were sent to an EPA Contract Laboratory Program (CLP) facility using the ILM05.3 Statement of Work (SOW) which defines the analytical methods accepted by the CLP for the isolation, detection, and quantitative measurement of 23 target analyte metals (including mercury) for quality assurance and quality control (QAQC) on the XRF samples. Analyses were performed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) and/or Inductively Coupled Plasma-Mass Spectrometry (ICP-MS). Soil nutrient, paste pH and organic analyses were performed on five surface soil samples by Colorado Analytical Laboratory. Acid Base Accounting (ABA) analyses were performed on five surface soil samples by ACZ Laboratories. Investigation derived waste (IDW) was handled as specified in the sampling work plan. Sampling occurred August 13-15, with XRF analysis occurring August 24-28, 2007 in Tetra Tech's Fort Collins Laboratory. Selected results from the XRF analyses of these samples are listed in Table 1a and shown on Figures 1A, 1B and 1C. ABA results are listed in Table 5a. Complete results are provided in Appendix D.

3.2.2 Subsurface Investigation

During the Phase I investigation, a total of 72 subsurface soil samples were taken at 25 locations using a direct push Geoprobe drill rig. The samples were analyzed for metals using XRF, as specified in the sampling plan. These samples were collected from depths varying from 1-foot to 14 feet. Soil nutrient, paste pH and organic analyses were performed on five subsurface soil samples by Colorado Analytical Laboratory. ABA analyses were performed on five surface soil samples by ACZ Laboratories. Sample locations along the six transects of the LSC site are identified on Figures 2A, 2B and 2C. IDW was handled as specified in the sampling work plan. Sampling occurred August 13-15, with XRF analysis occurring August 24-28, 2007 in Tetra Tech's Fort Collins Laboratory. Selected results from the XRF analyses of these samples are listed in Table 2a and are displayed on Figures 2A, 2B and 2C. ABA results are listed in Table 5a. Complete results are provided in Appendix D.

3.2.3 Groundwater Sampling

During the Phase I Investigation, a total of 21 piezometers were installed, each with a screened interval of five to ten feet below ground surface (bgs). These piezometers were surveyed by a licensed surveyor to obtain the elevations of the piezometers. Sixteen piezometers were sampled August 15-16; four of the wells were dry and one well did not recharge after purging, preventing samples from being taken from these five piezometers. The locations of the piezometers are indicated on Figures 3A, 3B and 3C. The water samples were submitted to ACZ Laboratories for iron speciation analysis, and to a CLP facility using the ILM05.3 SOW which defines the analytical methods accepted by the CLP for the isolation, detection, and quantitative measurement of 23 target analyte metals (including mercury) in water samples. Analyses were performed using ICP-AES and/or ICP-MS. Samples were analyzed for sulfate and dissolved and total metals and as specified in the sampling plan. IDW was handled as specified in the sampling work plan. Results from the analyses of these samples are listed in Table 3a and are displayed on Figures 3A, 3B and 3C.

3.3 Phase II Investigation

The original Sampling Plan stated that Phase II sampling would consist of additional XRF sampling to supplement that performed during Phase I. Phase II was also to include low flow surface water, sediment and groundwater sampling to support the metals transport modeling. Modifications to the Phase II activities resulted from discussions between Tetra Tech and EPA Region 8 personnel based on the results of the Phase I sampling and site conditions at the time of the Phase II sampling event. Modifications included performing additional surface soil sampling (0-6" depth interval) in upland areas, shallow subsurface samples (6-12" depth interval) at select surface soil sample locations, installation of additional piezometers for groundwater level measurement and sampling, and digging test pits in the floodplain area. Surface soil and shallow subsurface soil samples were sent to a CLP facility using the ILM05.3 SOW which defines the analytical methods accepted by the CLP for the isolation, detection, and quantitative measurement of 23 target analyte metals (including mercury) in both water and soil/sediment samples. Analyses were performed using ICP-AES and/or ICP-MS. Five Phase II upland surface soil samples were also analyzed for arsenic, cadmium, lead, and mercury using the Toxicity Characteristic Leaching Procedure (TCLP).

Test pit samples were sent to ACZ Laboratories for analysis of arsenic, cadmium, lead, zinc, soil pH and neutralization potential. Ten test pit samples were also to be analyzed for acid base accounting analysis for acid base potential, acid neutralizing potential (ANP) and acid generating potential (AGP).

Groundwater samples were sent to a CLP facility using the ILM05.3 SOW which defines the analytical methods accepted by the CLP for the isolation, detection, and quantitative measurement of 23 target analyte metals (including mercury) in both water and soil/sediment samples. Analyses were performed using ICP-AES and/or ICP-MS.

3.3.1 Surface Soil Sampling

During the Phase II investigation, a total of 230 surface soil samples (0-6" depth interval) were obtained to evaluate the presence of metals contamination in the upland areas adjacent to the floodplain. These samples were collected on a 425 ft grid throughout the LSC site. IDW was handled as specified in the sampling work plan. Sample locations were surveyed using a GPS unit with sub-meter accuracy. Sampling occurred October 29 through November 10, 2007.

Selected results from the analyses of these samples are listed in Table 1b and shown on Figures 1A, 1B and 1C. Complete results are provided in Appendix D.

3.3.2 Subsurface Investigation

The Phase II subsurface investigation was comprised of two parts. Shallow subsurface samples (6-12" depth interval) were collected at selected surface soil sample locations. Deeper samples, varying in depth from 0.5 to 4 feet, were collected from test pit locations within the floodplain area. The 6-12" sampling occurred October 29 through November 10, 2007, while the test pit sampling occurred Nov. 5-10, 2007. Subsurface sampling locations are identified on Figures 2A, 2B and 2C. A total of 26 samples were collected from the 6-12" depth interval in select surface soil sampling locations. A total of 22 test pits were dug to further delineate the extent of tailings material within the primary floodplain (tailings depositional) area. A total of 36 test pit samples were collected. IDW was handled as specified in the sampling work plan. Test pit samples were sent to ACZ Laboratories for metals and acid base accounting analyses. Lead speciation and mineralogical analysis was conducted by the University of Colorado on samples from four test pits. Selected results from the analyses of these samples are listed in Tables 2b and 2c and are displayed on Figures 2A, 2B and 2C. ABA results are listed in Table 5b. Complete results are provided in Appendix D. Test Pit Logs are provided in Appendix C of this report.

3.3.3 Groundwater Sampling

Eight additional piezometers were installed during the Phase II investigation. Groundwater from six of these piezometers was sampled on November 19, 2007, one piezometer was dry and one piezometer did not recharge sufficiently to allow for sample collection. The Phase II piezometers were screened at various depths depending on site conditions. Six of these piezometers were in three nested pairs, to measure metals in groundwater relative to screened interval. Screened depths are listed along with observed metals concentrations in Table 3b. The groundwater samples were submitted to an EPA CLP laboratory and analyzed for dissolved metals as specified in the sampling plan. IDW was handled as specified in the sampling work plan. Selected results from the analyses of these samples are listed in Table 3b and are displayed on Figures 3A, 3B and 3C. Complete results are provided in Appendix D.

3.3.4 Surface Water Sampling

As no locations were identified in Phase I for surface water or sediment samples along the main stream channel due to the lack of continuous flow in Silver Creek, Phase II surface water and sediment sampling was not conducted as prescribed in the sampling plan. However, an opportunistic sampling event was conducted in December to obtain surface water samples, primarily from the irrigation ditch paralleling Lower Silver Creek to the east. The amended surface water sampling approach specified locations for up to 14 surface water samples. Sample locations were selected based on access constraints. On December 17, 2007, seven surface water samples were taken from the LSC Site. Seven of the proposed samples were not obtained due to ice over the stream or insufficient stream flow. The surface water samples were analyzed for 23 metals (both total and dissolved) by an EPA CLP lab, and sulfate and iron speciation by ACZ laboratories. Selected results for cadmium, zinc, sulfate, ferrous iron and ferric iron are presented in Table 4a and sampling locations are shown on Figures 4A, 4B and 4C. Complete results are provided in Appendix D.

3.4 Geophysical Survey

A geophysical survey using Ground Penetrating Radar (GPR) was conducted December 3, through December 7, 2007. The purpose of the GPR survey was to determine if the results could be used to determine the depth and lateral extent of the tailings deposition areas. GPR is a geophysical technique which employs radio waves, typically in the 1 to 1,000 MHz frequency range, to map subsurface structures and features (man made and natural). GPR operates on the simple principal that electromagnetic waves, emitted from a transmitter antenna, are reflected from buried objects and detected by the receiver antenna. GPR data is presented in the form of time-distance plots that are analogous to conventional seismic records that provide a cross-sectional image or profile of reflections representing shallow subsurface conditions.

Fifty-two transects were taken at approximately 500 foot intervals across the floodplain/suspected tailings deposition area along the LSC Site. In general, the quality of the GPR data collected at the site was good, and limited interpretation of the data conducted in the field at the time of the survey implied that the data may be useful in determining the depth and lateral extent of tailings material. However, due to the limitations of the equipment and processing tools available in the field, a definitive interpretation and evaluation could not be conducted. Following the field data collection efforts, the interpretation process involved a detailed review of the field record to determine the presence of anomalous areas that may represent the presence of tailings deposits. A specialized software package (RADAN) created by the GPR equipment manufacturer was used to view and plot data and various filters were applied to enhance the records for interpretation.

Typically, material with a higher clay and water content has a greater conductivity, and based on the observations made during the test pit investigations, it was anticipated that a signature in the GPR record could be observed that would indicate the interface between the tailing material and the underlying organic clay (observed in most locations). Breaks in continuous shallow reflectors in the GPR record are typically indicative of possible trenching, excavation, and/or active depositional environments. The presence of buried utilities is typically indicated by parabolic-type reflectors.

The interpretation of the GPR record was performed first on transects in the vicinity of previously excavated test pits and borings, where a relatively clear understanding of the subsurface conditions had been developed. The figure presented in Appendix E is an image created from the GPR record along Transect 18 which was located in the immediate vicinity of test pits TP-8, TP-20 and TP-7, just north of Promontory Road. Based on observations of the surface along the transect and subsurface materials encountered in the test pit excavations, it appears that tailings material has been deposited across the entire width of the floodplain and that the depth of tailings material increased gradually from east to west. As indicated on Figure 5B, the tailings depth was 1.0 foot at TP-8 (east), 2.5 feet at TP-20 (center), and 5.5 feet at TP-7 (west; near the main stream channel). The tailing in each of these test pits was observed to be underlain by approximately 2 to 2.5 feet of black organic clay, with a sandy gravel material beneath. Within the tailings layer, inter-bedded layers of varying thickness (from several inches to a foot or more) and varying grain-size were observed. The tailings material observed varied from coarse sand to very fine silt. The white line on the figure included as Appendix E indicates the boundaries of an anomalous area within the GPR record represented by breaks in continuous shallow reflectors. The horizontal axis of the figure is distance along the transect and the vertical axis is an observed measurement from the receiver that can be converted to depth. The length of the anomalous area bounded by the white line in this figure is on the order of 20 to 25 feet. Several of these anomalous areas were observed along transects in this area,

however, no distinctive pattern of a nearly continuous layer of tailing material (or the underlying black organic clay layer) was observed.

Based on this comparison of the interpreted GPR data and site test pit data, we concluded that the nature of the deposited tailing did not provide a geophysical record that could be used to definitively determine the depth and lateral extent of the tailings material. Consequently, the majority of the GPR data was not processed.

3.5 Wetlands Delineation

Tetra Tech performed a wetlands delineation of the LSC area in late August through September, 2007. The wetlands delineation was conducted by Tetra Tech scientists experienced with the identification of wetland functions as they relate to jurisdictional status. Information collected in the field included the following: vegetative characteristics, soil type, geographic location, and hydrologic setting.

Delineation protocol followed the USACE Routine Wetland Determination. Fifty routine sample plots were located throughout the LSC Site to test for the occurrence of wetland hydrology, hydrophytic vegetation, and hydric soils. If all three of these wetland indicators were identified in a plot, then the area was classified as a wetland and the boundaries were marked with pin flags and recorded with a GPS device with sub-meter accuracy. Numerous informal shallow test pits were also hand excavated to assist in boundary determinations.

Waters of the U.S. (WUS) were also delineated. In addition to the Lower Silver Creek channel, irrigation ditches were investigated for whether their source of hydrology would qualify them for a WUS classification. Culverts and points of diversions were marked throughout the extensive irrigation system to document connectivity.

In total, 493.6 acres of wetlands were delineated, amounting to 26 percent of the LSC Site. Wetlands occupy most of the valley bottom west of the Rail Trail, as well as portions of the eastern side of the LSC Site. Wetland communities found in the valley bottom were dominated by Baltic rush (*Juncus balticus*). Species compositions changed moving eastward to include other dominant wetland indicator species such as blue-joint reed grass (*Calamagrostis canadensis*), redtop (*Agrostis stolonifera*), clustered field sedge (*Carex praegracilis*), and Nebraska sedge (*Carex nebrascensis*). Waters of the U.S. totaled 15.8 miles. An additional 4.1 miles of non-wetland waters of the U.S. were also identified.

The majority of the tailings deposition area within the floodplain has been preliminarily characterized as jurisdictional wetlands. Other wetland areas have also been identified outside of the floodplain area, consisting of both natural and irrigation-induced wetlands. The boundaries of the delineated wetlands are presented on the series of figures presenting sampling results. The Wetlands Delineation Report is presented in Appendix F of this report.

4.0 SAMPLING RESULTS

The results of all data collected during both the Phase I and Phase II site investigation activities are presented and discussed in this Section, by media. Complete sampling results and analytical laboratory reports are provided in Appendix D.

4.1 Tailings Characteristics and Volume Estimate

Subsurface soil results were utilized to estimate tailings depths through various reaches of LSC. Figures 5A and 5B show eight distinct reaches, with a tailings depth of 0.5 ft to 4.0 ft. Field observations recorded on boring and test pit logs and sampling results were used to determine these depths. Tailings were identified by physical characteristics such as medium to coarse grained sand size, with inter-bedded layers of finer silt-sized tailings, brown to grey color, and by elevated concentrations of metals. Within the identified areas of tailings deposition, a relatively thick layer of black organic clay was observed immediately below the tailing in most areas underlain by a sandy-gravel substrate. This organic clay layer may represent the topsoil layer of the valley prior to the deposition of tailing material. Areas where this organic layer was not present include areas along the stream channel through the site, where the upper tailing and organic layers appear to have been eroded away by the water course, and the northern end of the site, identified as Area 1 on Figure 5B, where this organic layer was not observed in any of the test pits. The data collected from the geophysical survey was not used as part of this analysis, as preliminary analyses of the GPR results were inconclusive (Section 3.4). A preliminary tailings volume of approximately 1,479,000 cubic yards (CY) of tailings was estimated in the LSC Site based on the extents and tailings depth shown in Figures 5A and 5B. Areas delineated as tailings typically have arsenic, cadmium, lead, and zinc levels over the applicable EPA Region 9 Preliminary Remediation Goals (PRGs).

4.2 Surface Soil

Surface soil results can be split into two groups, upland samples and floodplain samples. The wetlands delineation lines on the figures are also used to distinguish between upland and floodplain samples. Floodplain samples typically coincide with tailings deposition areas having higher concentrations of metals, while upland samples typically have lower concentrations of metals. When compared to the residential and industrial PRGs for surficial soil, samples within the floodplain generally exceed the industrial PRGs for lead and occasionally exceed the residential PRGs for cadmium and zinc. Intermittently, samples in the upland areas exceed the residential PRG for lead and a few upland samples exceed the residential PRG for cadmium. The upland samples exceeding PRGs may correlate with their proximity to irrigation channels. A number of Phase I subsurface soil samples, analyzed by XRF, possessed arsenic and cadmium concentrations less than the limit of detection. Arsenic concentrations in surficial floodplain and upland samples exceed the EPA Region 9 residential PRG of 0.39 mg/kg. The fact that unimpacted soils in upland areas possess arsenic concentration above the PRG suggests that regional (background) concentrations are elevated. Note that the majority of the arsenic concentrations fall within the range observed in surface soils in the western United States of <0.10 to 97 mg/kg (Shacklette and Boerngen, 1984).

Data from surface soil samples is shown in Figures 1A, 1B, and 1C, and is listed in Tables 1a and 1b. Analytical data is presented in Appendix D of this report.

4.3 Subsurface Soil

Subsurface soil sample results include Phase I boring samples in upland and floodplain areas, Phase II 6-12" samples in upland areas and Phase II test pit samples in floodplain areas. Samples from the Phase II test pits were categorized by soil type including clay, peat, sandy gravel, sandy silt, tailing and topsoil. Metal concentrations were above the industrial PRGs for arsenic and lead for all 20 of the test pit samples taken in tailings. Nineteen of 20 of the tailings samples also exceeded the residential PRG for cadmium. Six of 20 test pit samples identified as tailings exceeded the residential PRG for zinc. Of the Phase II 6-12" samples taken in upland locations, all samples exceeded the industrial PRG for arsenic, five of 26 samples exceeded the industrial PRG for lead, six of 26 samples exceeded the residential PRG for lead and one of 26 samples exceeded the residential PRG for cadmium. No samples exceeded the residential PRG for zinc. A number of Phase I subsurface soil samples, analyzed by XRF, had arsenic and cadmium concentrations less than the limit of detection. Approximately half of the Phase I subsurface samples taken in the floodplain area exceed the industrial PRG for arsenic and lead. Eight of 45 Phase I floodplain subsurface soil samples exceed the residential PRG for cadmium and zinc. Five of 27 Phase I upland subsurface soil samples exceed the industrial PRG for arsenic, and two samples exceed the industrial PRG for lead. No Phase I upland subsurface soil samples exceed the PRGs for cadmium or zinc.

Data from subsurface soil sampling is shown in Figures 2A, 2B, and 2C, and is listed in Tables 2a, 2b and 2c. Analytical data is presented in Appendix D of this report. Boring Logs are presented in Appendix B and Test Pit Logs are presented in Appendix C of this report.

4.4 Additional Waste Characteristic Analyses

Additional waste characteristic analyses included acid-base accounting (ABA), toxicity characteristic leaching procedure (TCLP), lead speciation and mineralogical analyses, soil nutrient, paste pH and organic analyses.

Five Phase I surface soil samples, five Phase I subsurface soil samples and ten Phase II test pit samples were selected for ABA analysis. ABA analysis compares the acid neutralizing potential (ANP) and acid generating potential (AGP) of a soil. An ANP/AGP greater than one indicates the sample has a net neutralization potential; whereas, an ANP/AGP ratio less than one indicates that a sample is acid generating. Samples with ANP/AGP ratios greater than three are considered non-acid generating.

Of the ten Phase I samples analyzed, eight had an acid base potential greater than one, indicating a net neutralization potential. The acid generating potential for two of the samples was not detected above the practical quantitation limit; therefore, the ANP/AGP ratio was not calculated for these samples. Two samples had an ANP/AGP ratio less than one, indicating that these samples are acid generating. These acid generating samples were taken from transect 5, E 0375 and W 0175 in the floodplain. Data from the Phase I ABA analysis is listed in Table 5a.

Of the ten Phase II samples analyzed, nine had an acid base potential greater than one, indicating a net neutralization potential (eight of the nine samples had an ANP/AGP ratio between one and three). One sample had an ANP/AGP ratio less than one, indicating that this sample is acid generating. This acid generating sample was taken from test pit 19, in parcel SS-28-A-X, very near the location of piezometer T6W0175. Data from the Phase II ABA analysis is listed in Table 5b.

Five Phase II upland surface soil samples were analyzed using the TCLP. Arsenic, cadmium, lead, and mercury were tested in the TCLP extracts and compared to Resource Conservation and Recovery Act (RCRA) TCLP respective disposal limits. Four of the five samples have metals concentrations below the TCLP limits for arsenic, cadmium, lead and mercury (RCRA does not have a TCLP disposal limit for zinc). One sample, UE01-44-0.5, had a lead concentration higher than the RCRA TCLP disposal limit; however, concentrations for arsenic, cadmium and mercury for this sample were below the TCLP disposal limits. Data from the TCLP analysis is listed in Table 6.

Lead speciation was performed on samples from four test pits; TP-3, TP-4, TP-9 and TP-14 (Figures 2A, 2B, and 2C). The results indicate that, within the LSC tailing material, lead is present primarily as the lead carbonate mineral cerrusite ($PbCO_3$). Lead is also present in the sulfide galena (PbS), the sulfate anglesite ($PbSO_4$) and is associated with phosphates and iron hydroxides in the tailings. In general, lead is considered bioavailable in the tailings.

Complete data from the ABA and TCLP analyses, as well as the lead speciation, mineralogical analysis, soil nutrient, paste pH and organic analyses are provided in Appendix D.

4.5 Groundwater

Groundwater samples were collected from the piezometers installed in the Phase I and Phase II investigations. These results are presented in Tables 3a and 3b and Figures 3A, 3B, and 3C. These results are representative of the shallow groundwater within the Lower Silver Creek area. No uses of this shallow groundwater were identified in the area, although it is likely that this shallow groundwater interacts with the surface water in Lower Silver Creek. As no uses of groundwater were identified, the concentrations of metals in groundwater were not compared to PRGs.

As described in Section 3.0, the initial Phase I piezometers were installed with the screened interval of the well at depths of 5 to 10 feet bgs. This well construction placed the screened interval below the base of the tailings material in nearly every situation. Several well screens did intersect the tailings, as indicated in Table 3a, and in these cases higher metals concentrations in the groundwater were observed. Observations of conditions during the Phase II test pit excavations revealed that south of Promontory Road groundwater was observed only in the sandy gravel material beneath the organic clay, but that north of Promontory Road, some water was observed to occur within the tailings above the clay layer. At the northern portion of the Site, north of the gravel road near the wastewater treatment plant, the organic clay was not observed to be present and groundwater was observed within the tailing area. To further investigate the occurrence, and quality, of groundwater (or perched water) within the tailing, additional piezometers with shallower screened intervals were installed during Phase II. As indicated in Table 3b, the groundwater quality observed in the shallow piezometers screened within the tailings had much higher metals concentrations than in those screened below the tailing. Data from groundwater samples is shown in Figures 3A, 3B, and 3C, and is listed in Tables 3a and 3b.

4.6 Surface Water

Surface water samples were collected from seven of the 14 locations planned for surface water sampling. Two of the 14 samples were not obtained as the stream was frozen at the prescribed location, and five of the samples were not obtained due to insufficient stream flow. Cadmium

concentrations in all seven samples were greater than the 0.6 ug/L applicable criteria for chronic water quality standard targets for aquatic wildlife. Zinc concentrations were above the water quality standard targets for aquatic life. Ferric iron and ferrous iron were not detected above the practical quantitation limit of 0.01 mg/L and 0.05 mg/L respectively for any of the samples. Data for cadmium, zinc, ferric iron, ferrous iron and sulfate are presented in Table 4a. Complete results for the surface water sampling are provided in Appendix D.

The results from these samples, obtained primarily from the irrigation ditch, indicate that metals concentrations do not significantly increase as the water flows the length of the site. Of notable exception are the results from station SW-4. Station SW-4 is located in a secondary channel which crosses through a tailings deposition area near the southern end of the Site. Zinc and cadmium concentrations at this location are elevated in comparison to the upstream location SW-2 (located on the irrigation diversion channel immediately north of Highway 248 and east of the rail trail). Water from Lower Silver Creek is diverted into the irrigation ditch system just above, or south of, Highway 248, and the majority of the diverted flow is directed through station SW-2. A relatively small amount of water is not diverted and flows along the west side of the rail trail and under Highway 248. Approximately 1,000 feet north of Highway 248, this water passes under the rail trail and is carried through a ditch which appears to be constructed through deposited tailings. Station SW-4 is located at the end of this diversion ditch immediately before the confluence with the main irrigation ditch.

A selection of surface water data from the April 2004 USGS Report: Principal Locations of Metal Loading from Floodplain Tailings, Lower Silver Creek, Utah is also presented in Figures 4A, 4B and 4C. This data was compared to the Chronic Water Quality Standard Targets for Aquatic Wildlife for Cadmium, Lead and Zinc (adjusted for a hardness of 400 mg/L) defined by the Utah Administrative Code Rule R317-2 – Standards of Quality for Waters of the State, Tables 2.14.2 and 2.14.3a (UDEQ-DWQ, 2008). Based on this comparison, all but five of the 114 samples exceed the Chronic Water Quality Standard Targets for Aquatic Wildlife for cadmium and all but eight of the 114 samples exceed the Chronic Water Quality Standard Targets for Aquatic Wildlife for zinc. Twenty-two of the 114 samples exceeded the Chronic Water Quality Standard Targets for Aquatic Wildlife for lead. Complete results from the April 2004 USGS report are included in Table 4b.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The information and data collected from the site investigation activities described in this report have advanced the understanding of the nature and extent of tailings material present within the Lower Silver Creek Site and will be useful in developing a conceptual site model. Tailings material is widely distributed throughout the floodplain area and exhibits significantly elevated metals concentrations, with lead concentrations ranging from 3,000 mg/kg to well over 20,000 mg/kg. While the groundwater conditions observed may not be indicative of typical conditions, due to the relatively dry conditions experienced in 2007 and previous years, there is evidence that groundwater (potentially perched) present within the tailing material (typically near the north end of the Site) has significantly higher metals concentrations than concentrations observed in what may be represented as the shallow alluvial aquifer occurring beneath the organic clay layer throughout much of the site. The degree of interaction between tailing material and surface water and between groundwater and surface water was not able to be determined due to the regional drought.

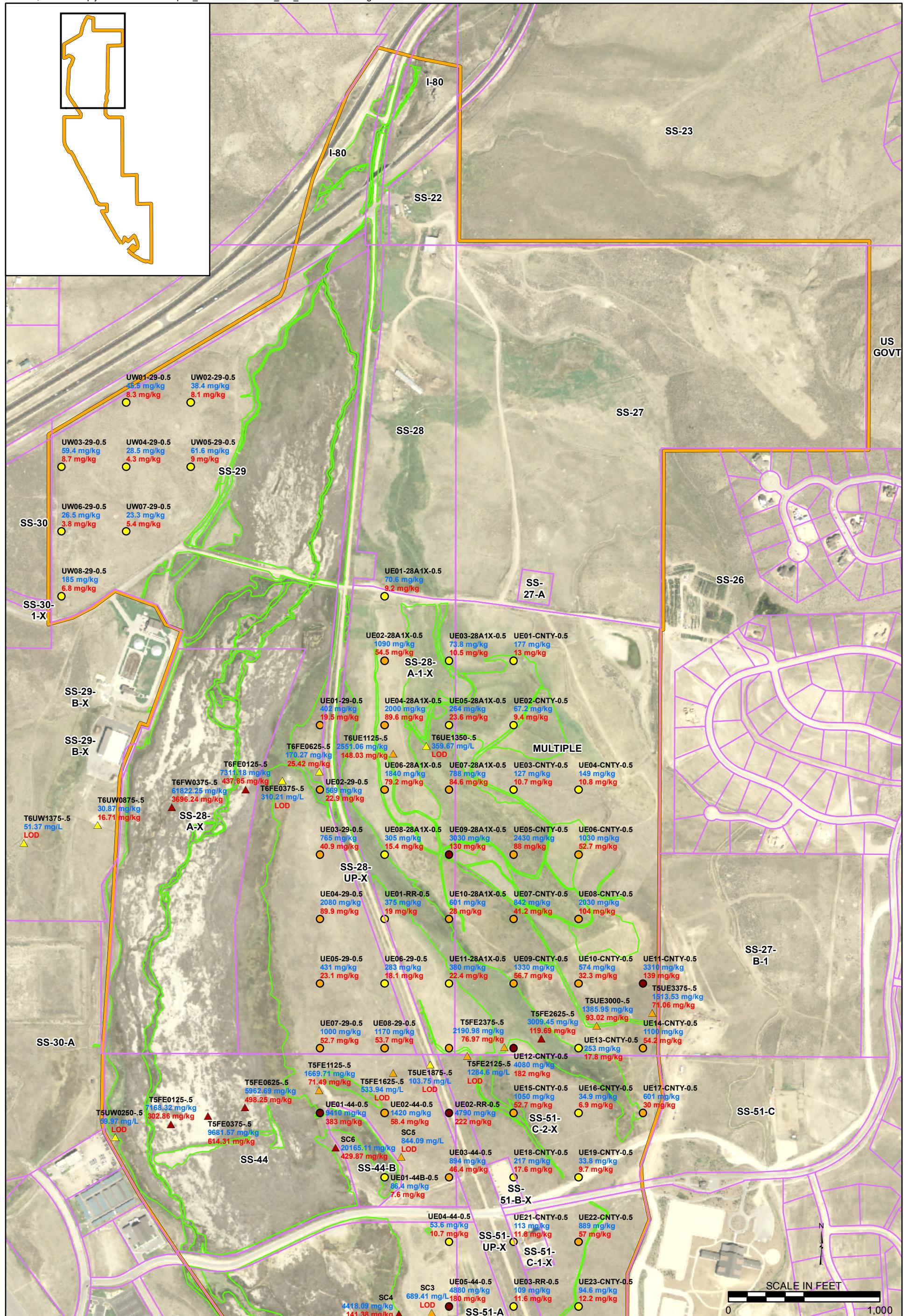
The results of the Phase II surface soil sampling efforts have more accurately described metals concentrations throughout the uplands areas within the study area boundary. From our preliminary evaluation of this data, it appears that concentrations of metals in general and lead in particular do not exceed typical health-based remediation goals in areas which are not influenced by irrigation. In areas where it appears likely that irrigation water may have been applied, diverted from Silver Creek upstream of the Site, elevated lead concentrations were observed ranging from 400 mg/kg to 4,000 mg/kg.

Previously collected surface water data for Silver Creek indicates that surface water entering the Lower Silver Creek floodplain area contains elevated concentrations of various metals. Through the LSC Site, metals concentrations continue to increase. The relative contribution from various potential sources remains uncertain. Additional sampling is recommended to allow the performance of additional reactive-transport modeling to assist in determining the primary contributing sources and develop comprehensive remedial alternatives for the Site.

Additional field investigations (test pits or borings) may also be required to more accurately determine the lateral and vertical extent of the tailings and estimate the volume of tailings material present.

REFERENCES

- EPA 2004. Environmental Protection Agency, Region 9 Preliminary Remediation Goals (PRGs) Table. October.
- Shacklette, H.T and Boerngen, J.G, 1984, Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, U.S. Geological Survey Professional Paper 1270, 105 p.
- Tetra Tech 2007. Field Sampling Plan August .
- UDEQ – DERR, 2002, “Innovative Assessment Analytical Results Report, Lower Silver Creek, Summit County, Utah,” October.
- UDEQ – DWQ, 2004, “Silver Creek: Total Maximum Daily Load for Dissolved Zinc and Cadmium,” August.
- UDEQ-DWQ, 2008. Chronic Water Quality Standard Targets for Aquatic Wildlife for Cadmium, Lead and Zinc (adjusted for a hardness of 400 mg/L) defined by the Utah Administrative Code Rule R317-2 – Standards of Quality for Waters of the State, Tables 2.14.2 and 2.14.3a
- U.S. Geological Survey (USGS), 1989, “Gold deposits in the Park City Mining District, Utah,” U.S. Geological Survey Bulletin 1857.
- USGS 2004. USGS Report: Principal Locations of Metal Loading from Floodplain Tailings, Lower Silver Creek, Utah, April.
- Utah Geological Society, 1968, “Ore Deposits of the Park City District.”



Note: Phase I samples were analyzed by X-Ray Fluorescence.

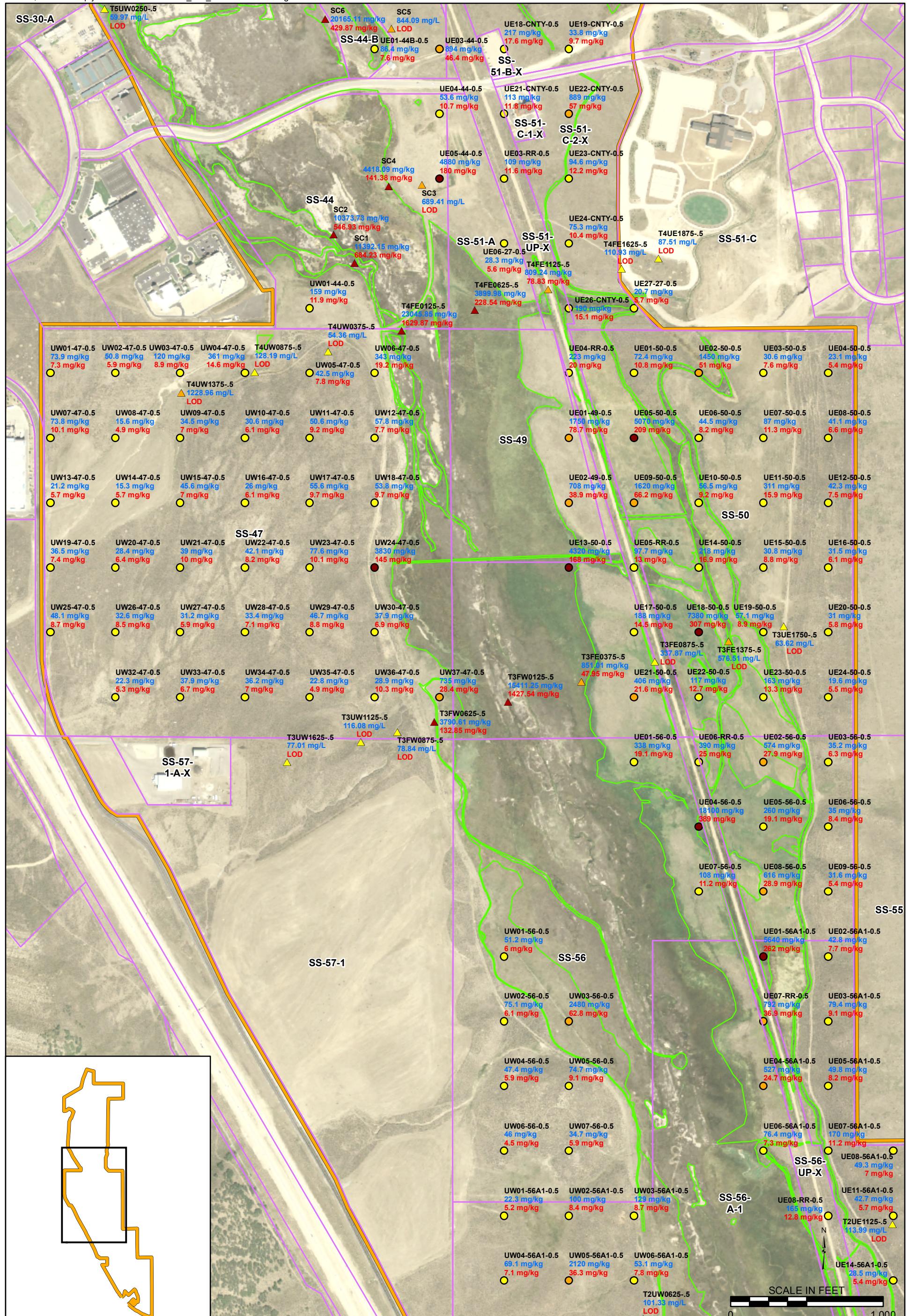
Phase II samples were analyzed by Inductively Coupled Plasma-Arc Emission Spectroscopy (ICP-AES) and/or Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

MAR 20, 2008

FIGURE 1A

SURFACE SOIL SAMPLING RESULTS SILVER CREEK 010379X

LOD = Not detected above the Limit of Detection



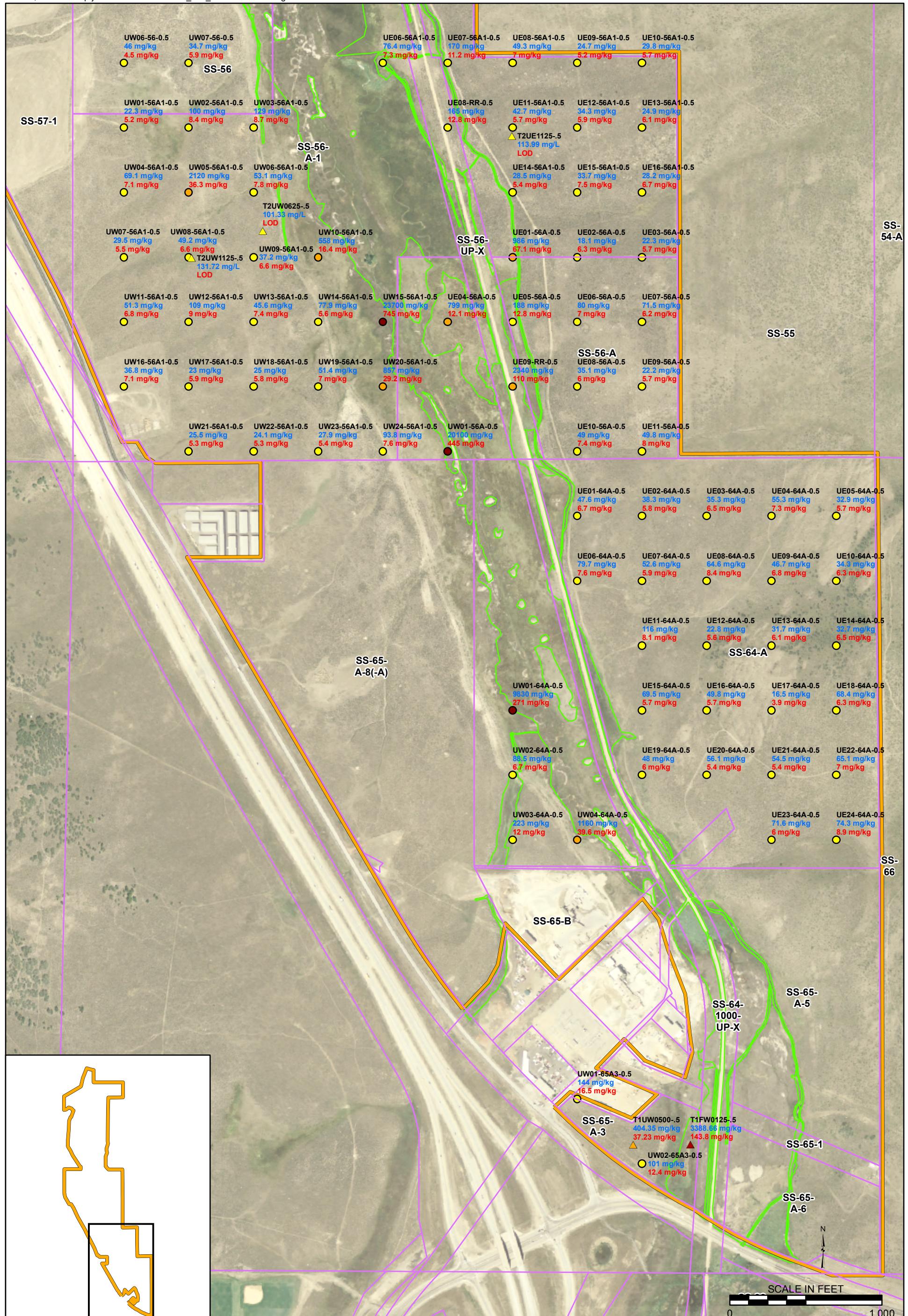
Note: Phase I samples were analyzed by X-Ray Fluorescence.

Phase II samples were analyzed by Inductively Coupled Plasma-Arc Emission Spectroscopy (ICP-AES) and/or Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

JAN 18, 2008

FIGURE 1B

SURFACE SOIL SAMPLING RESULTS SILVER CREEK 010379X



Note: Phase I samples were analyzed by X-Ray Fluorescence.
Phase II samples were analyzed by Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) and/or Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

JAN 18, 2008

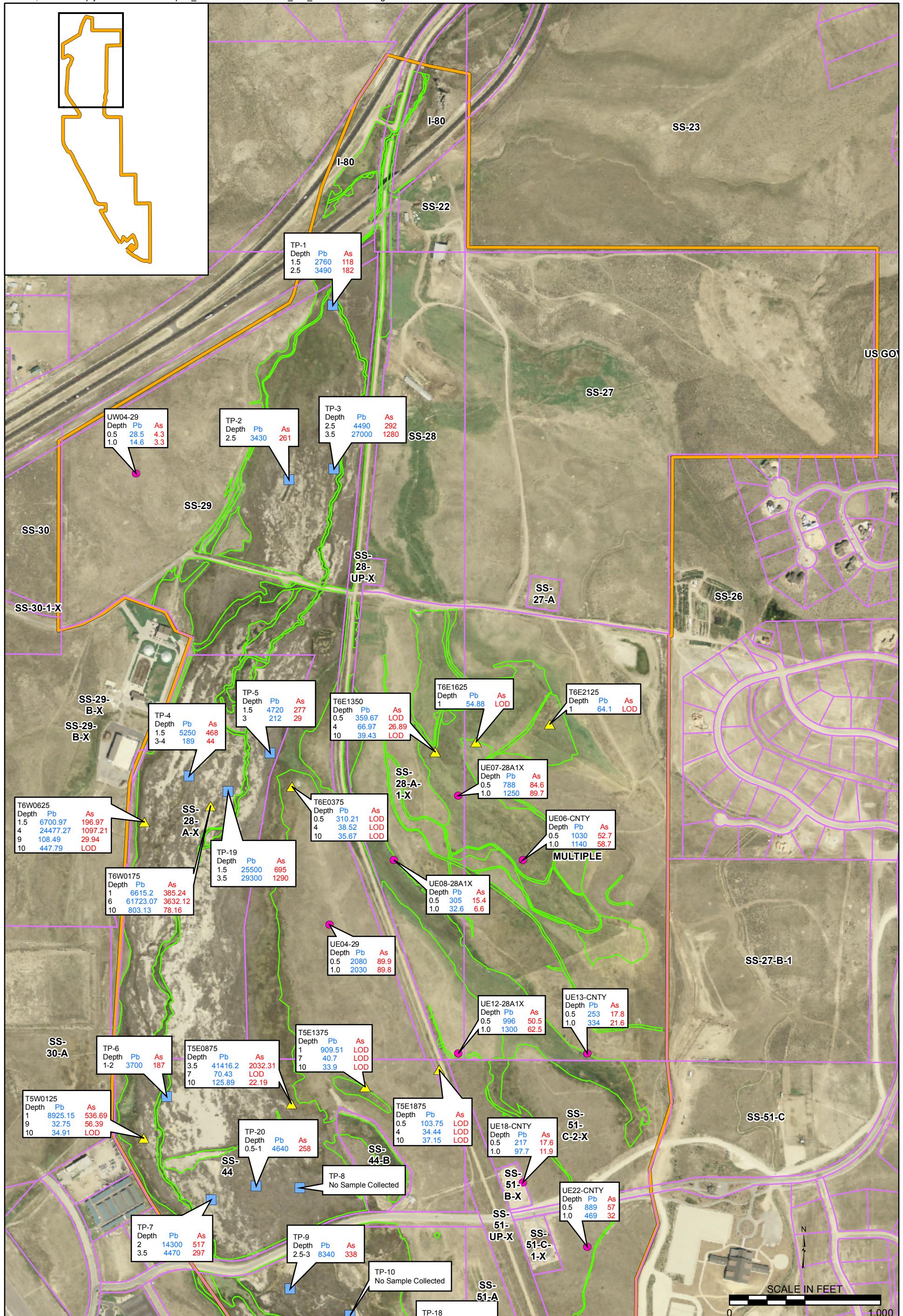
FIGURE 1C**Legend**

Phase I Surface Soil Samples	Phase II Surface Soil Samples
Lead (mg/kg)	Lead (mg/kg)
< 400	< 400
400 - 3000	400 - 3000
> 3000	> 3000

Study Boundary
Parcel Boundaries
Wetlands Delineation
Pb Conc. mg/kg
As Conc. mg/kg

LOD = Not detected above the Limit of Detection

**SURFACE SOIL SAMPLING RESULTS
SILVER CREEK 010379X**



Note: Phase I samples were analyzed by X-Ray Fluorescence.

Phase II samples were analyzed by Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) and/or Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

MAR 20, 2008

FIGURE 2A

**Legend**

- ▲ Phase I Subsurface Soil Samples
- Phase II Subsurface Soil Samples
- Phase II Test Pits

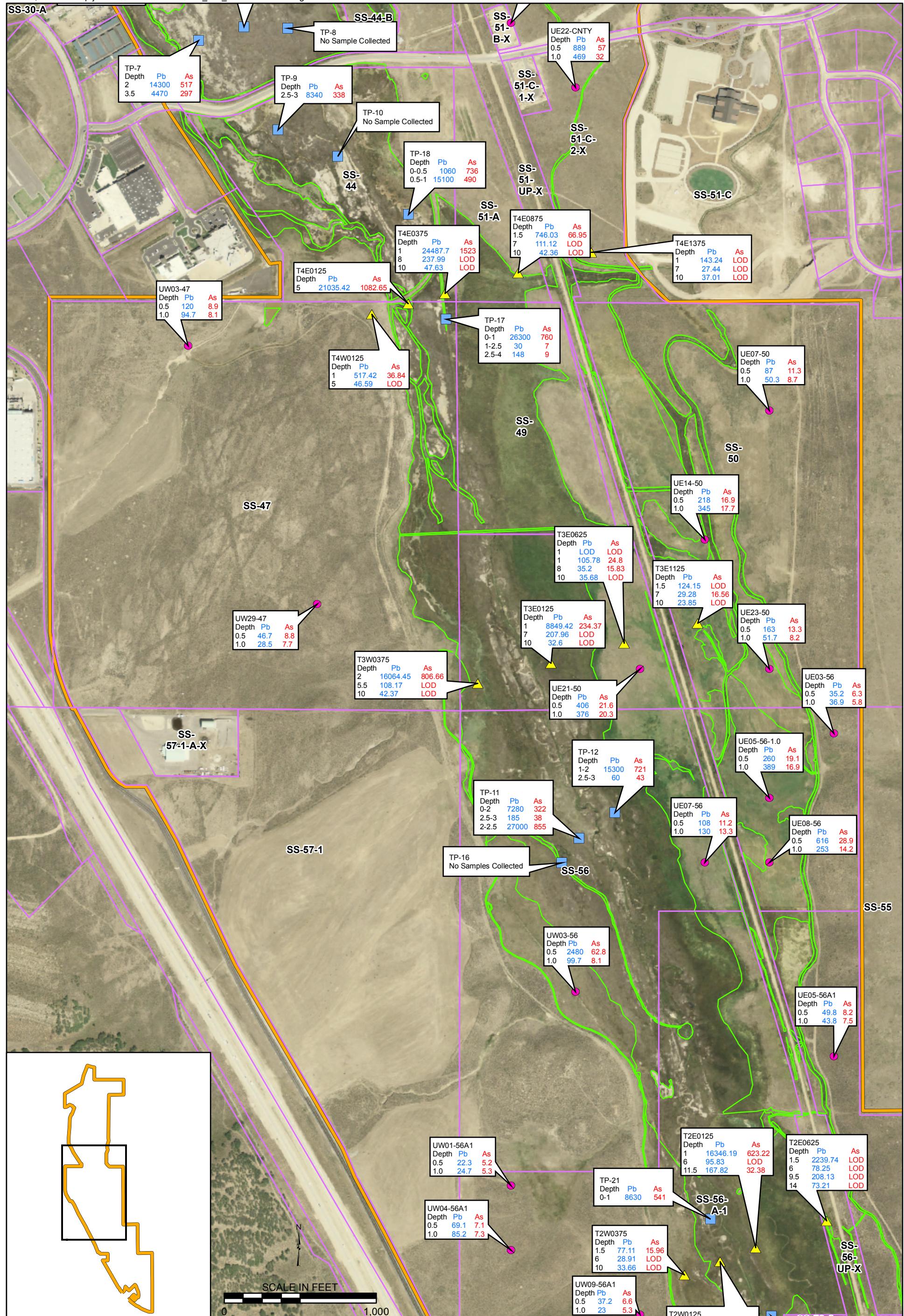
Parcel Boundaries

Study Boundary

U = Not Standard above the Practical Quantitation Limit

Sample Id	Depth (ft)	Pb(mg/kg)	As(mg/kg)
-----------	------------	-----------	-----------

**SUBSURFACE SOIL SAMPLING RESULTS
SILVER CREEK 010379X**



Note: Phase I samples were analyzed by X-Ray Fluorescence.

Phase II samples were analyzed by Inductively Coupled Plasma-Arc Emission Spectroscopy (ICP-AES) and/or Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

JAN 18, 2008

FIGURE 2B

LOD = Not detected above the Limit of Detection

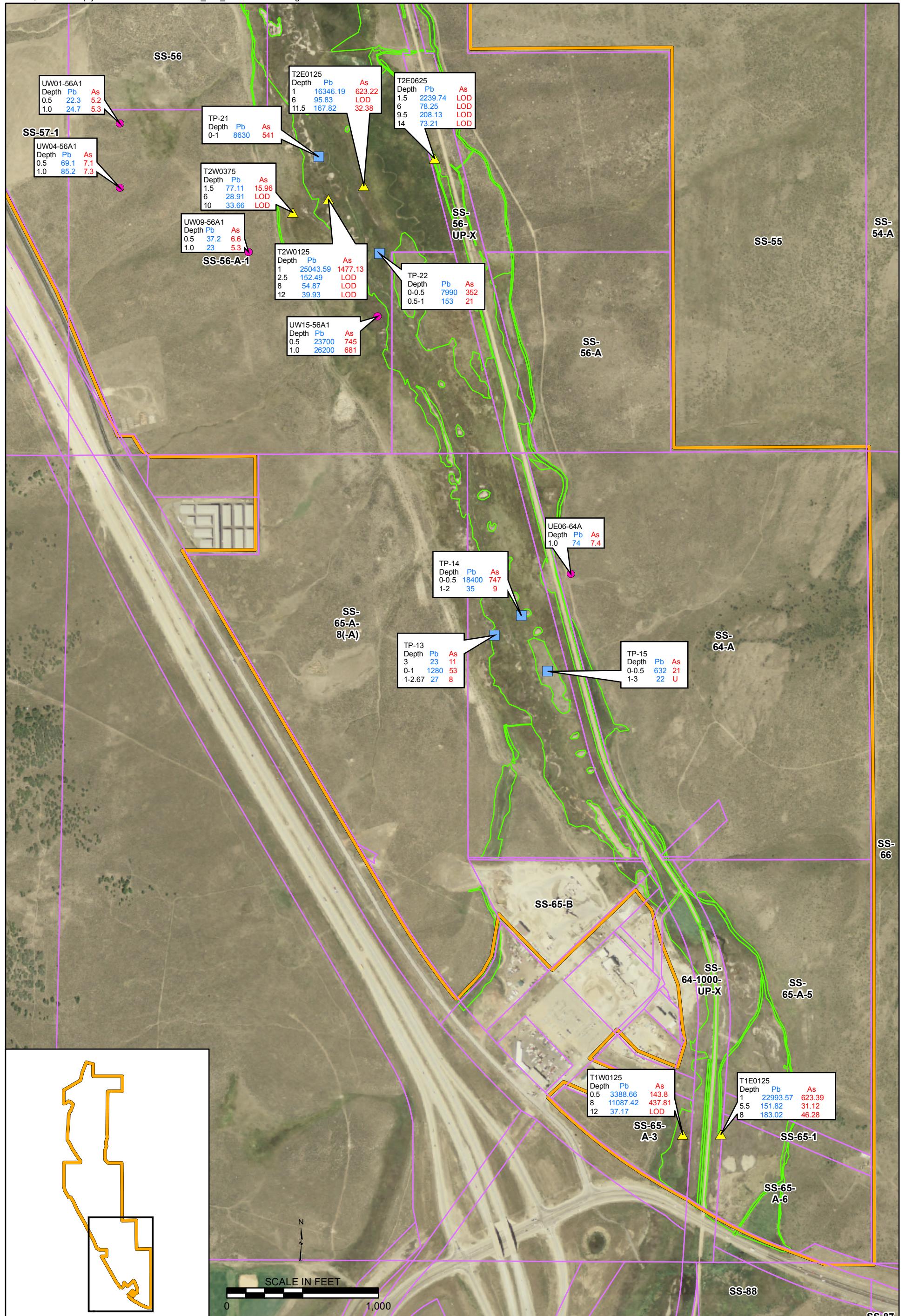
U = Not detected above the Practical Quantitation Limit

SUBSURFACE SOIL SAMPLING RESULTS SILVER CREEK 010379X

**Legend**

- Yellow triangle: Phase I Subsurface Soil Samples
- Pink dot: Phase II Subsurface Soil Samples
- Blue square: Phase II Test Pits
- Orange line: Study Boundary
- Purple line: Parcel Boundaries
- Green line: Wetlands Delineation

Sample Id
Depth (ft)
Pb(mg/kg) As(mg/kg)

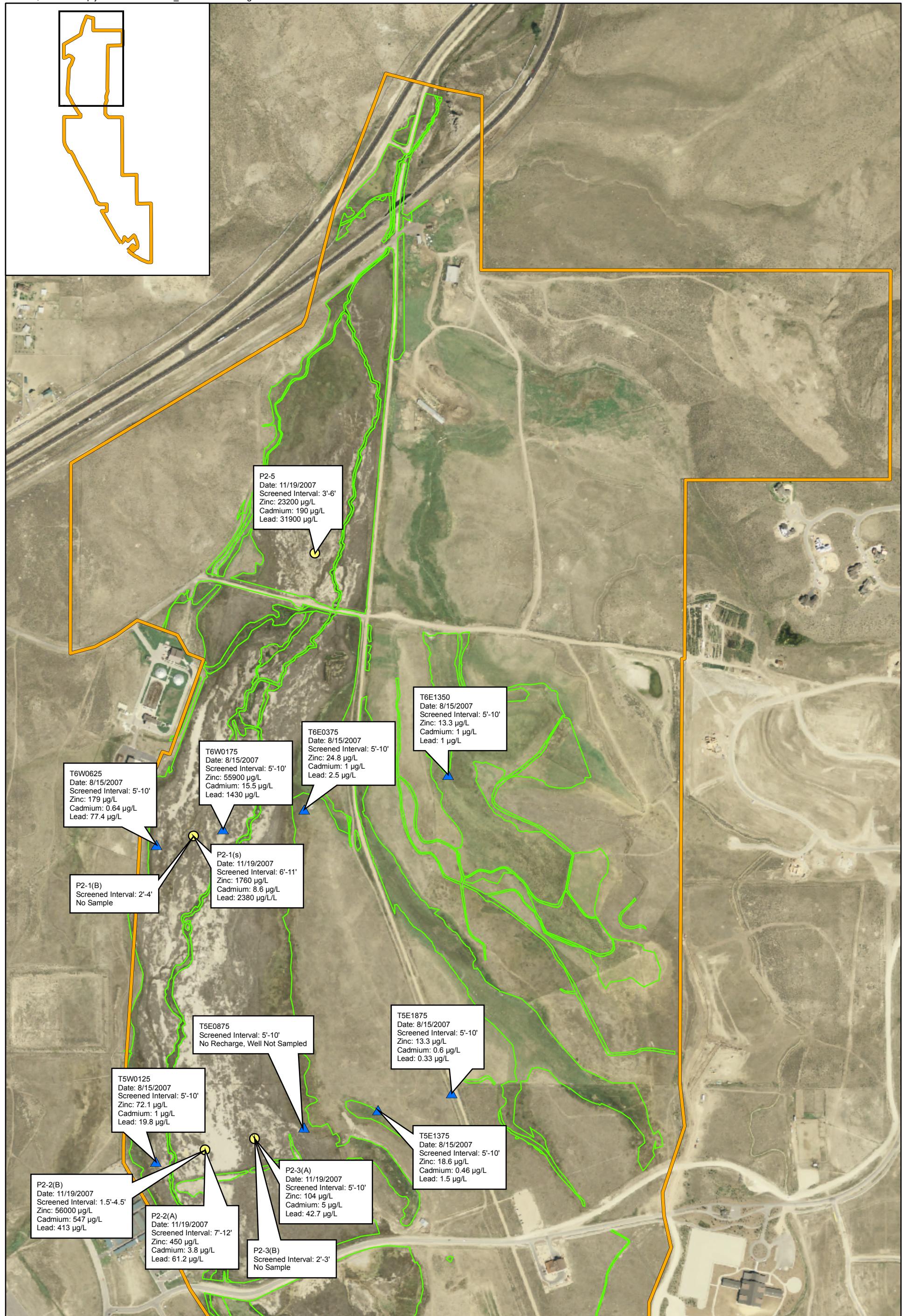


JAN 18, 2008

FIGURE 2C

SUBSURFACE SOIL SAMPLING RESULTS SILVER CREEK 010379X

LOD = Not detected above the Limit of Detection
U = Not detected above the Practical Quantitation Limit



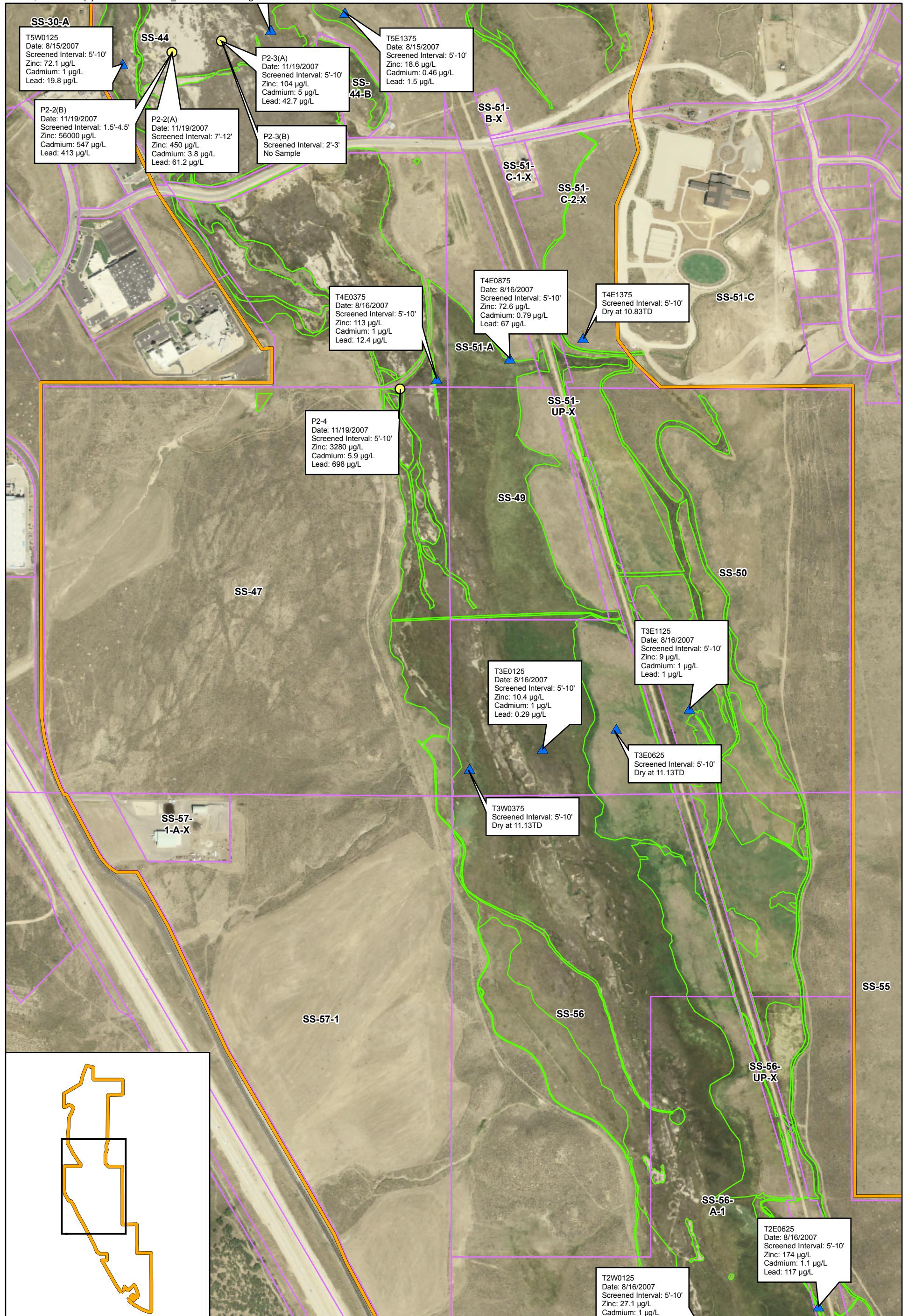
Note: All samples were analyzed by Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) and/or Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

MAR 20, 2008

FIGURE 3A

SCALE IN FEET

0 1,000



Note: All samples were analyzed by Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) and/or Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

JAN 17, 2008

FIGURE 3B**Legend**

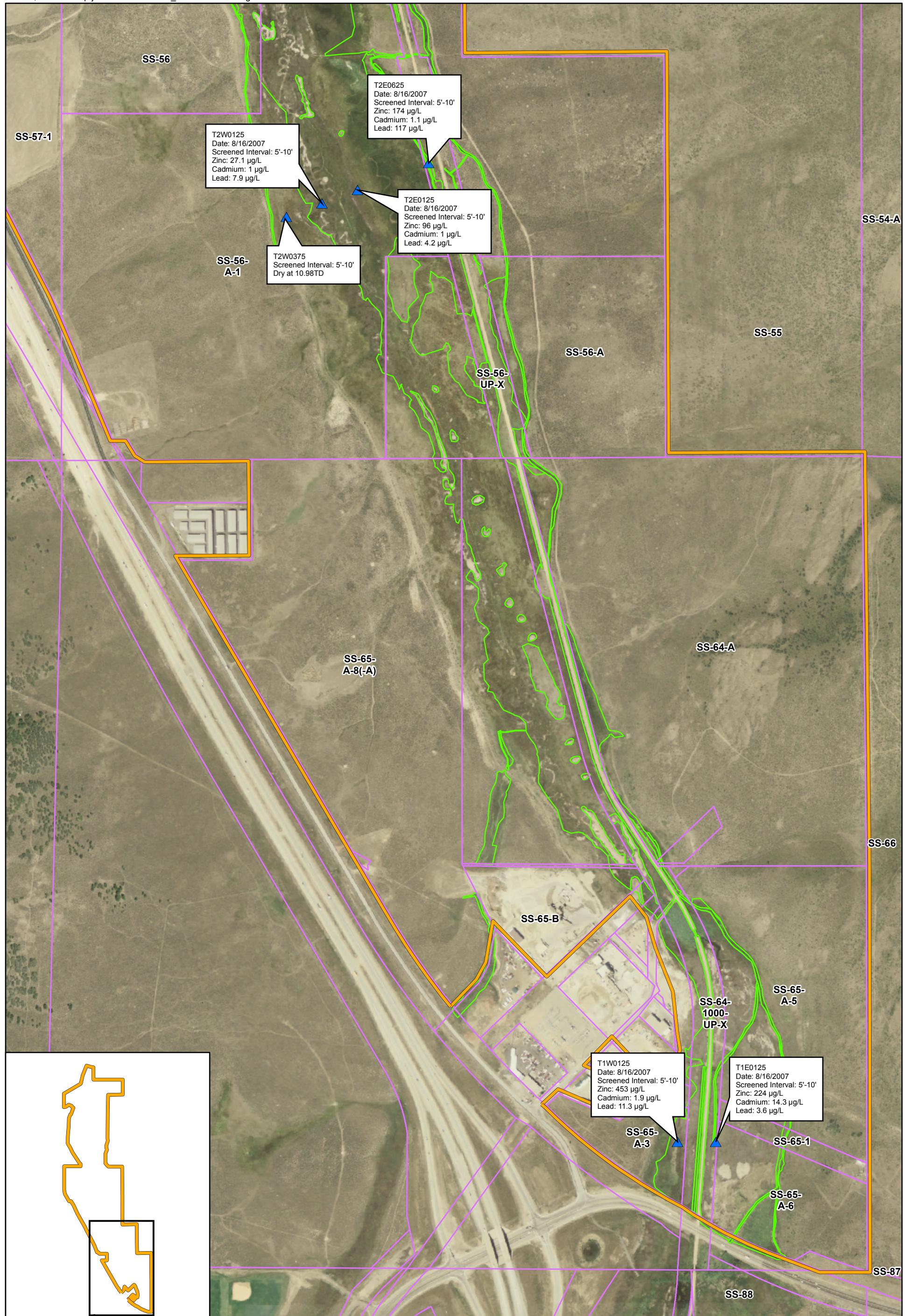
- ▲ Phase I Groundwater Sample Locations
- Phase II Groundwater Sample Locations
- Study Boundary
- Parcel Boundaries
- Wetlands Delineation

N



SCALE IN FEET
0 1,000

GROUNDWATER SAMPLING RESULTS
SILVER CREEK 010379X



Note: All samples were analyzed by Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) and/or Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

JAN 18, 2008

FIGURE 3C



Legend

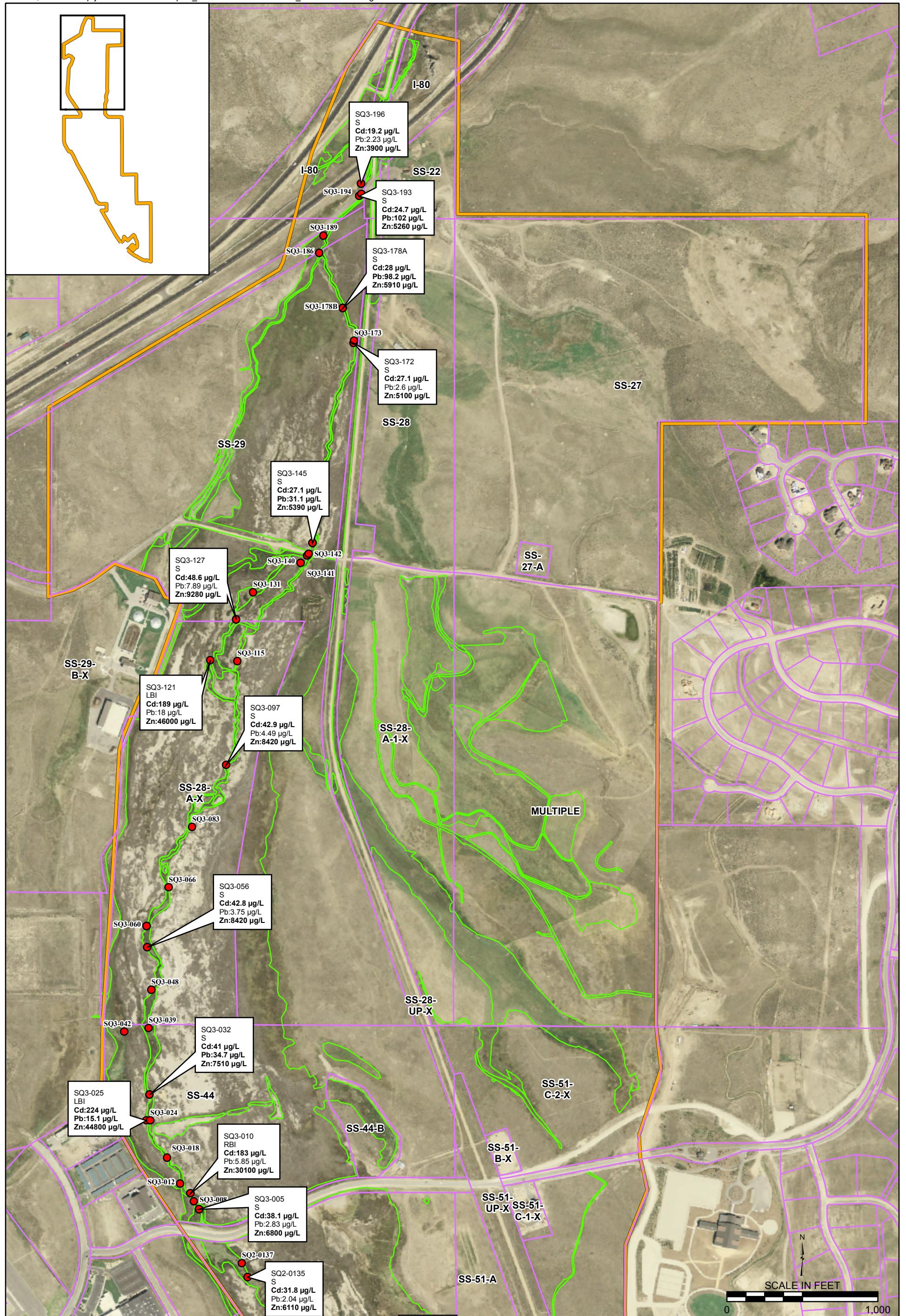
- ▲ Phase I Groundwater Sample Locations
- Phase II Groundwater Sample Locations
- Study Boundary
- Parcel Boundaries
- Wetlands Delineation

N

SCALE IN FEET

0 1,000

**GROUNDWATER SAMPLING RESULTS
SILVER CREEK 010379X**



Note: 1) Data presented in figure represents dissolved metals concentrations for selected representative values. Data obtained from the April, 2004 USGS Report: Principal Locations of Metal Loading from Floodplain Tailings, Lower Silver Creek, Utah.
2) Bold values represent values above the Chronic Water Quality Standard Targets for Aquatic Wildlife for Cadmium, Lead, and Zinc (adjusted for a hardness of 400 mg/L) defined by the Utah Administrative Code Rule R317-2 - Standards of Quality for Waters of the State, Tables 2.14.2 and 2.14.3a, UDEQ-DWQ, 2008.

MAR 20, 2008

FIGURE 4A**Legend**

● Surface Water Samples

— Study Boundary

■ Parcel Boundaries

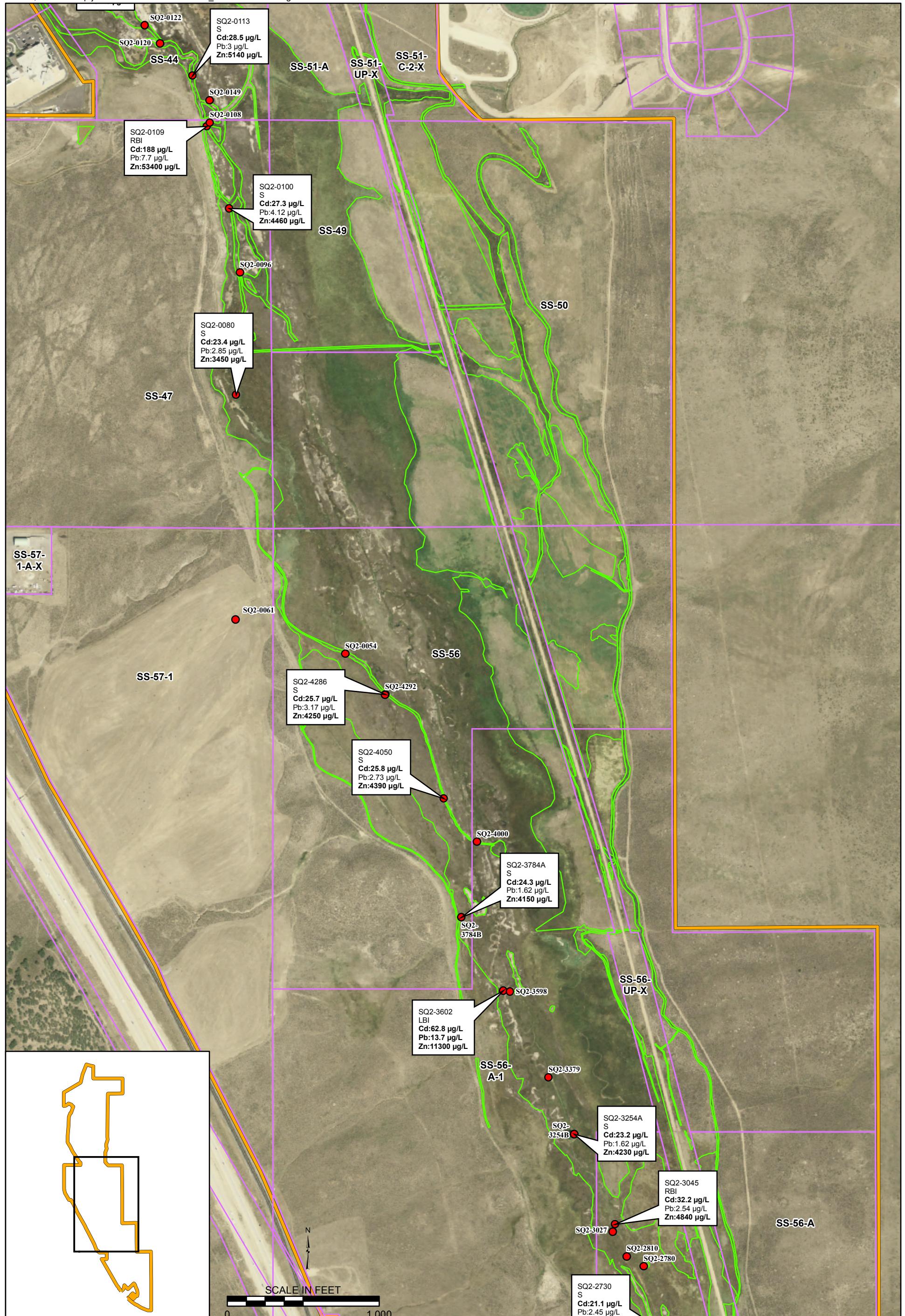
■ Wetlands Delineation

S = Stream

RBI = Right Bank Inflow

LBI = Left Bank Inflow

**SURFACE WATER SAMPLING RESULTS
SILVER CREEK 010379X**



Note: 1) Data presented in figure represents dissolved metals concentrations for selected representative values. Data obtained from the April, 2004 USGS Report: Principal Locations of Metal Loading from Floodplain Tailings, Lower Silver Creek, Utah.
2) Bold values represent values above the Chronic Water Quality Standard Targets for Aquatic Wildlife for Cadmium, Lead, and Zinc (adjusted for a hardness of 400 mg/L) defined by the Utah Administrative Code Rule R317-2 - Standards of Quality for Waters of the State, Tables 2.14.2 and 2.14.3a, UDEQ-DWQ, 2008.

JAN 21, 2008

FIGURE 4B

SURFACE WATER SAMPLING RESULTS SILVER CREEK 010379X

**Legend**

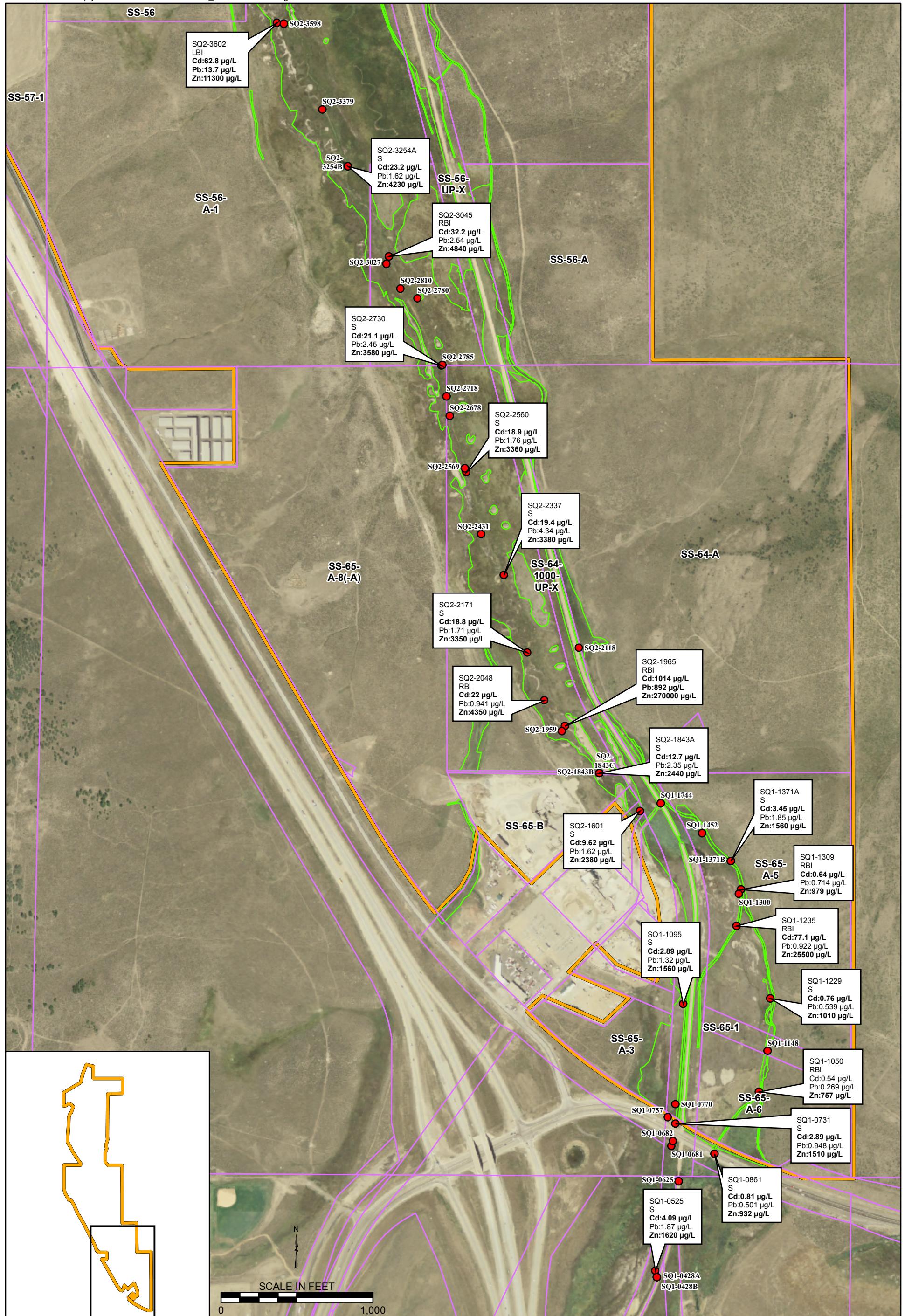
● Surface Water Samples

— Study Boundary

■ Parcel Boundaries

■ Wetlands Delineation

S = Stream
RBI = Right Bank Inflow
LBI = Left Bank Inflow



Note: 1) Data presented in figure represents dissolved metals concentrations. Data obtained from the April, 2004 USGS Report: Principal Locations of Metal Loading from Foodplain Tailings, Lower Silver Creek, Utah.
2) Bold values represent values above the Chronic Water Quality Standard Targets for Aquatic Wildlife for Cadmium, Lead, and Zinc (adjusted for a hardness of 400 mg/L) defined by the Utah Administrative Code Rule R317-2 - Standards of Quality for Waters of the State, Tables 2.14.2 and 2.14.3a, UDEQ-DWQ, 2008.

JAN 21, 2008

FIGURE 4C

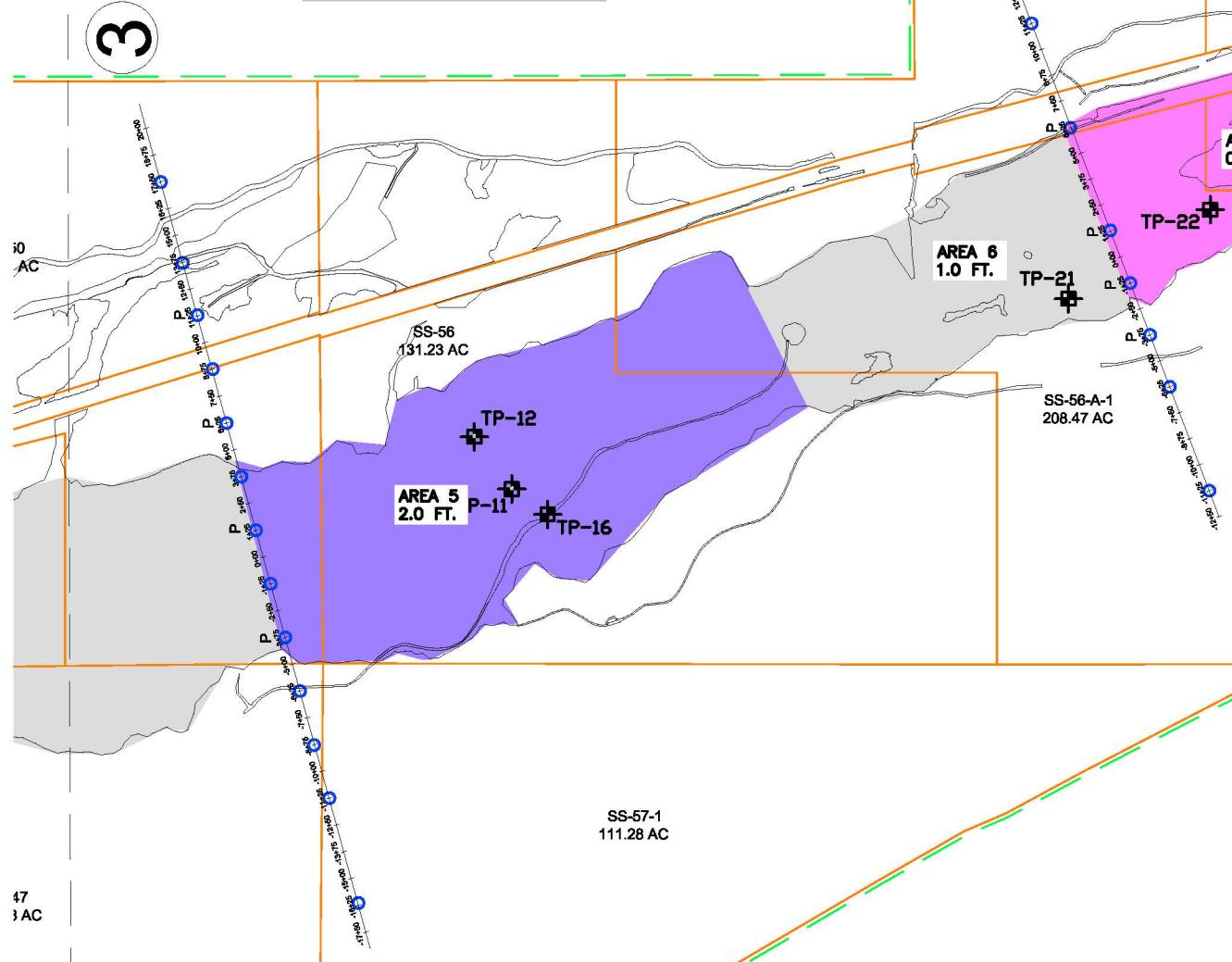
SURFACE WATER SAMPLING RESULTS
SILVER CREEK 010379X

MATCH LINE

Description	Area (sf)	Area (ac)	Est. Tailings Depth (ft)	Est. Volume (cy)
AREA 1	1,566,621	36.0	5.0	291,000
AREA 2	4,832,090	110.9	3.0	537,000
AREA 3	1,628,121	37.4	2.0	121,000
AREA 4	2,490,887	57.2	1.0	93,000
AREA 5	2,350,619	54.0	2.0	175,000
AREA 6	1,146,475	26.3	1.0	43,000
AREA 7	1,322,818	30.4	0.5	25,000
AREA 8	1,307,120	30.0	4.0	194,000
TOTAL:	382.1			1,479,000

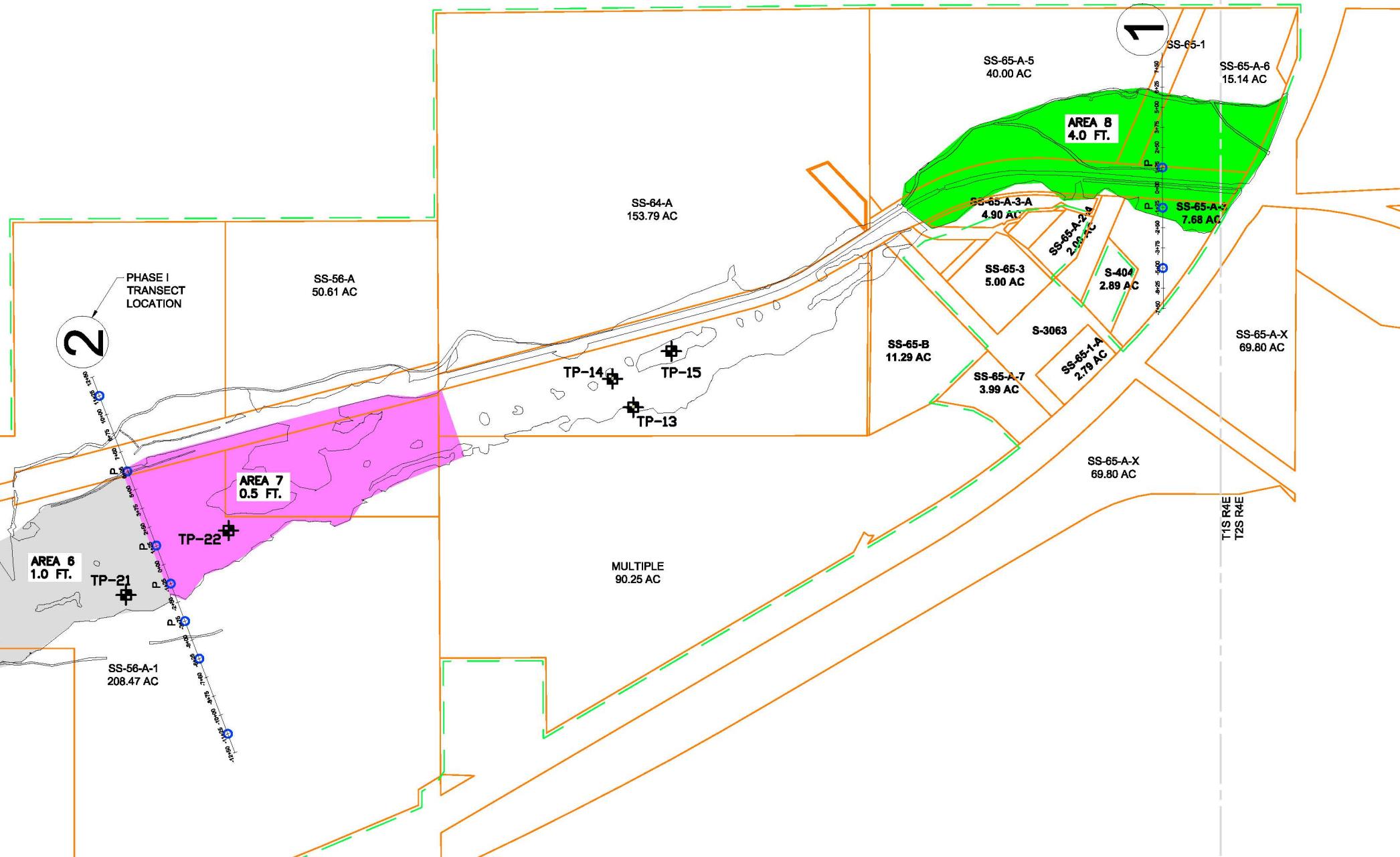
Testpit ID	Tailings Depth (Depth BGS)	Black Organic Clay Layer (Depth BGS)
TP-11	0 - 2	N/A
TP-12	0 - 2	2 - 2.5
TP-13	N/A	0 - 1
TP-14	N/A	0.5 - 1.5
TP-15	N/A	N/A
TP-16	0 - 2	2 - 3
TP-21	0 - 1	1 - 3.5
TP-22	0 - 0.5	0.5 - 1

BGS: Below Ground Surface



DRAFTS/PHASE II-FIGURE 5A-TAILINGS-SOUTH-SITEPLAN-3000x3000 PM, APRIL 2007

47
AC



LEGEND

PARCEL BOUNDARY	TAILINGS DEPTH = ~0.5 FT.
AREA OF HIGH WETLANDS POTENTIAL	TAILINGS DEPTH = ~1.0 FT.
STREAMS AND DITCHES	TAILINGS DEPTH = ~2.0 FT.
EXISTING FENCE	TAILINGS DEPTH = ~3.0 FT.
SITE BOUNDARY	TAILINGS DEPTH = ~4.0 FT.
SECTION LINE	TAILINGS DEPTH = ~5.0 FT.



P



TP-7

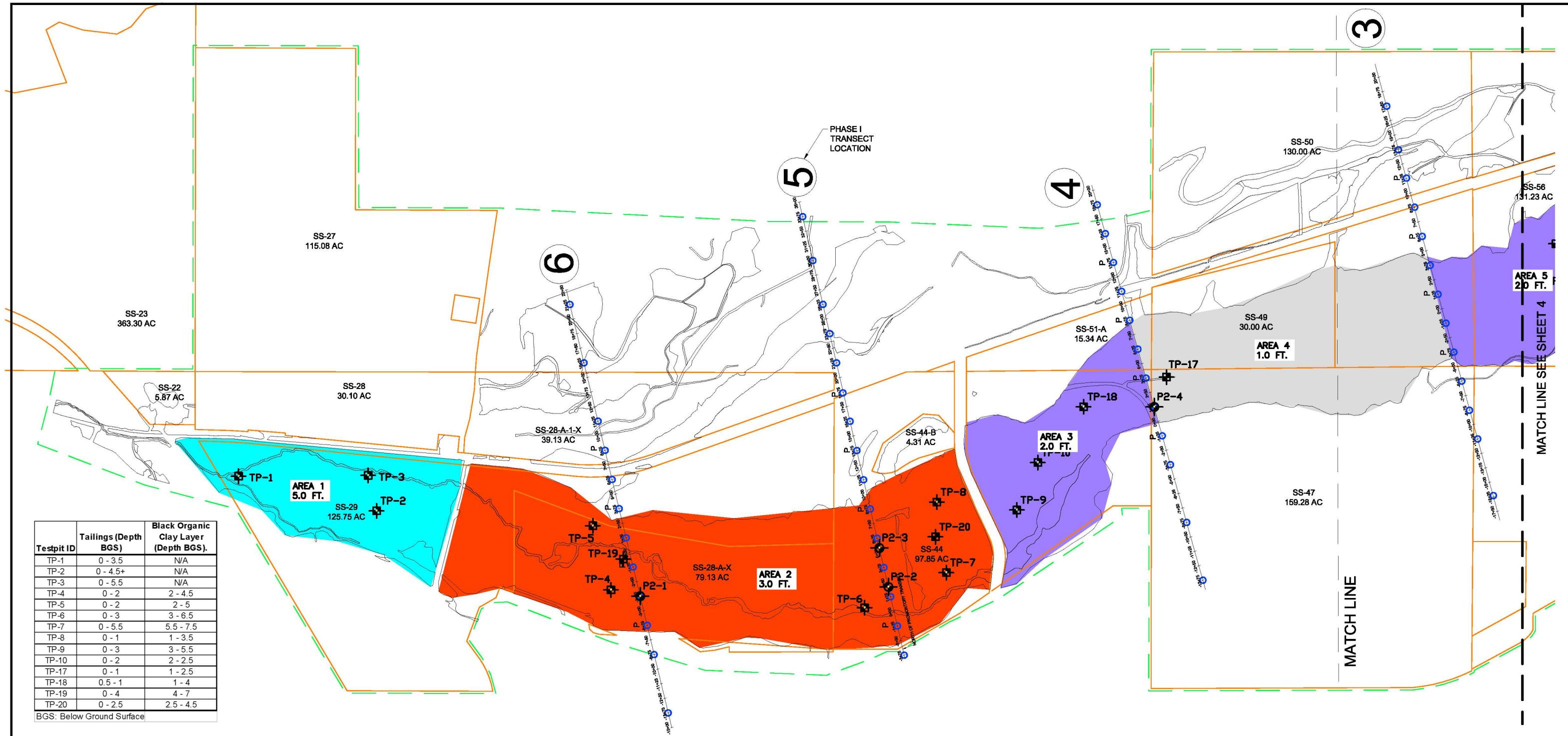


P2-3

PHASE I SAMPLE LOCATION
PHASE I PIEZOMETER/BORING LOCATION
PHASE II TESTPIT LOCATION
PHASE II PIEZOMETER LOCATION

NO.	REVISIONS		DATE BY	
	DESCRIPTION	DATE		
LWR SILVER CR LOAD REDUCTION ALTERNATIVES				
PRELIMINARY TAILINGS VOLUME ESTIMATE				
DESIGNED BY: BS	APPROVED BY: BM	JOB NO.	Sheet:	
DRAWN BY: KW	DATE: 6/19/2007	19.3924.008.00	FIG. 5A	
CHECKED BY: BS	SCALE: AS NOTED			

TETRA TECH
1900 S. SUNSET ST., SUITE 1-F, LONGMONT, CO 80501
TEL 303.772.5262 FAX 303.772.7039



LEGEND

- PARCEL BOUNDARY
- AREA OF HIGH WETLANDS
- POTENTIAL STREAMS AND DITCHES
- EXISTING FENCE
- SITE BOUNDARY
- SECTION LINE
- PHASE I SAMPLE LOCATION
- P PHASE I PIEZOMETER/BORING LOCATION
- TP-7 PHASE II TESTPIT LOCATION
- P2-3 PHASE II PIEZOMETER LOCATION

- TAILINGS DEPTH = ~0.5 FT.
- TAILINGS DEPTH = ~1.0 FT.
- TAILINGS DEPTH = ~2.0 FT.
- TAILINGS DEPTH = ~3.0 FT.
- TAILINGS DEPTH = ~4.0 FT.
- TAILINGS DEPTH = ~5.0 FT.

Description	Area (sf)	Area (ac)	Est Tailings Depth (ft)	Est. Volume (cy)
AREA 1	1,566,621	36.0	5.0	291,000
AREA 2	4,832,090	110.9	3.0	537,000
AREA 3	1,828,121	37.4	2.0	121,000
AREA 4	2,490,887	57.2	1.0	93,000
AREA 5	2,350,619	54.0	2.0	175,000
AREA 6	1,146,475	26.3	1.0	43,000
AREA 7	1,322,818	30.4	0.5	25,000
AREA 8	1,307,120	30.0	4.0	194,000
TOTAL:		382.1		1,479,000

0 400 800 1200
Scale In Feet

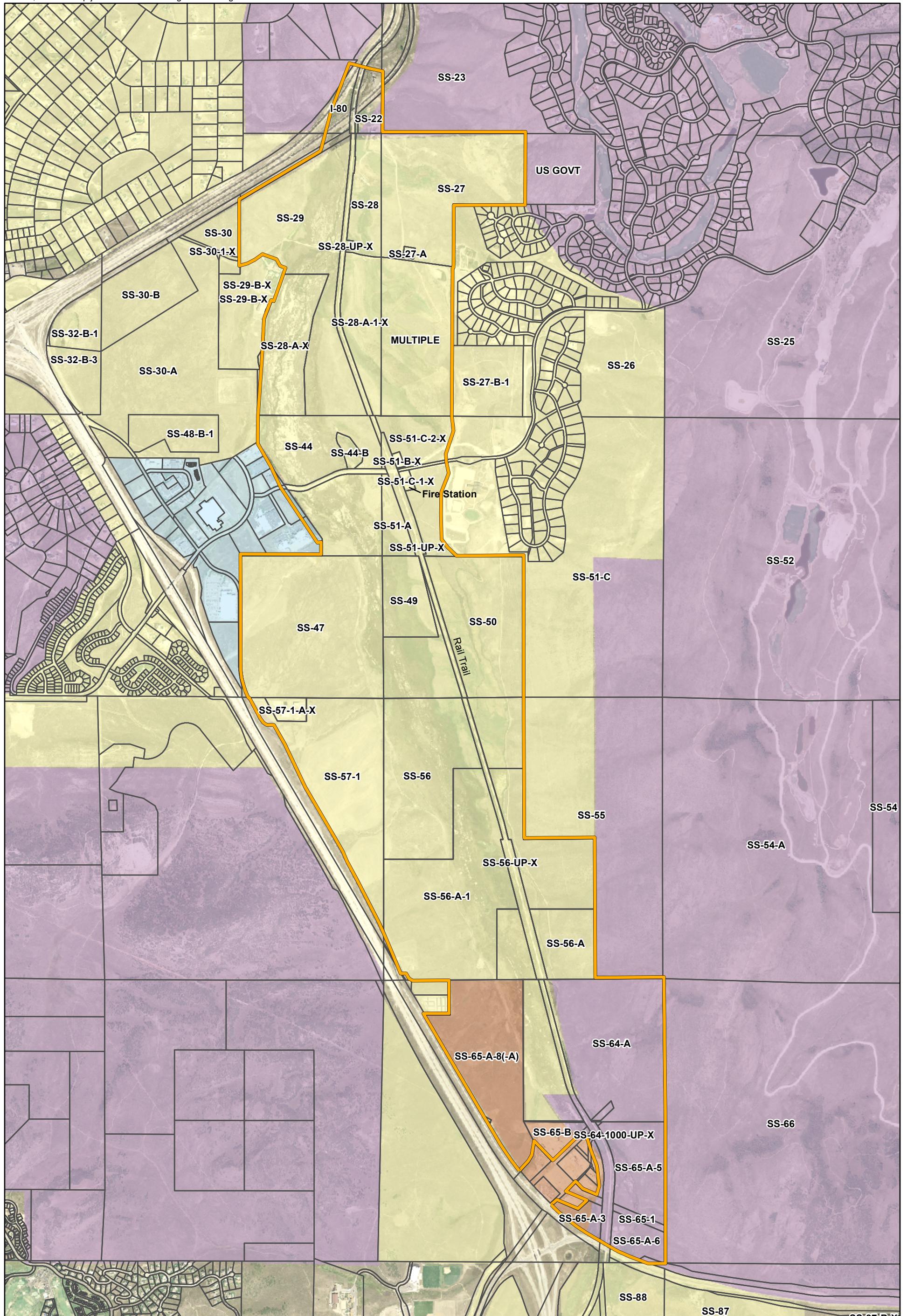
NO.	REVISIONS		DATE	BY
	DESCRIPTION	DATE		

LWR SILVER CR LOAD REDUCTION ALTERNATIVES

PRELIMINARY TAILINGS VOLUME ESTIMATE

TETRA TECH
1900 S. SUNSET ST., SUITE 1-F, LONGMONT, CO 80501
TEL 303.772.5282 FAX 303.772.7036

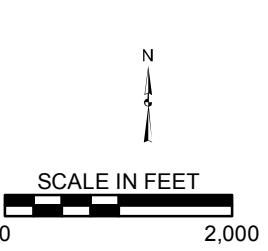
DESIGNED BY: BS	APPROVED BY: BM	JOB NO.:	SHEET:
DRAWN BY: KW	DATE: 4/12/2007	—	FIG. 5B
CHECKED BY: BS	SCALE: AS NOTED		

**Legend****Snyderville Zoning**

- Community Commercial (CC)
- Hillside Stewardship (HS)
- Rural Residential (RR)
- Service Commercial (SC)

Study Area Boundary

Parcel Boundaries



JAN 29, 2008

FIGURE 6

ZONING MAP
LOWER SILVER CREEK

APPENDIX A

ACCESS AGREEMENTS

APPENDIX B

BORING LOGS

MONITORING WELL/BORING NO. P2-1a

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: N 7435073.96, E 1646163.29

PROJECT NO: 1158520004.100

DRILLING CONTRACTOR: Clement Drilling and Geophysical

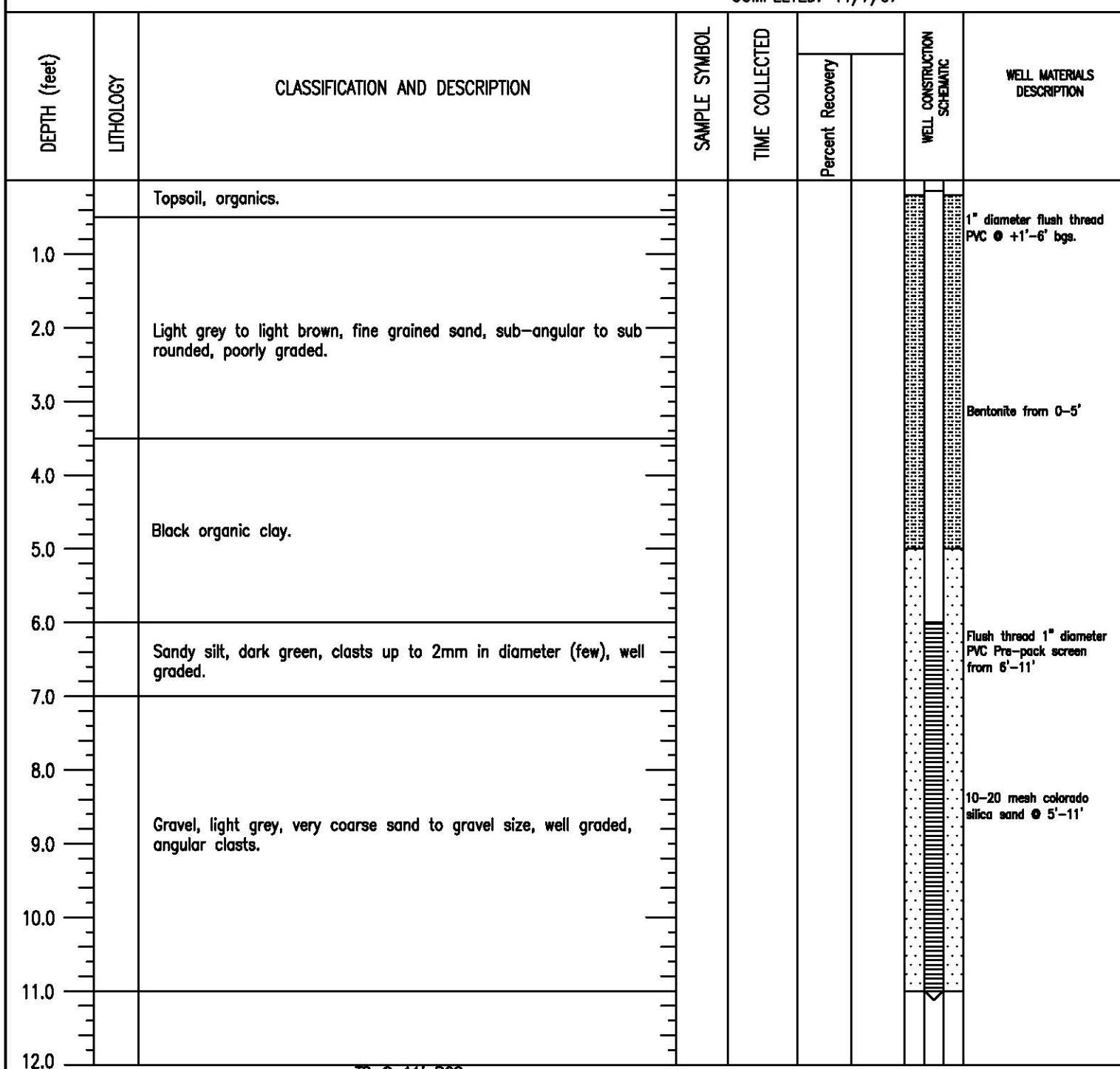
LOGGED BY: Chris Hayes

DRILLING METHOD: direct push (sampling),
8.25-inch O.D. hollow-stem auger.

REMARKS:

ELEVATION: 6456.90' white casing top,
6457.08' black casing top.(ft) GROUNDWATER: ~ 4.20' below top of black casing -
DATE: HOLE STARTED: 11/7/07 (11/19/07)

COMPLETED: 11/7/07



Soil Logging Sample Location



Laboratory Sample Location

MONITORING WELL/BORING NO. P2-1b

PROJECT: Lower Silver Creek

PROJECT NO: 1158520004.100

LOGGED BY: Chris Hayes

REMARKS: Second well drilled just south of 1st.
 4' deep
 2' screen and sand
 Bentonite to top.

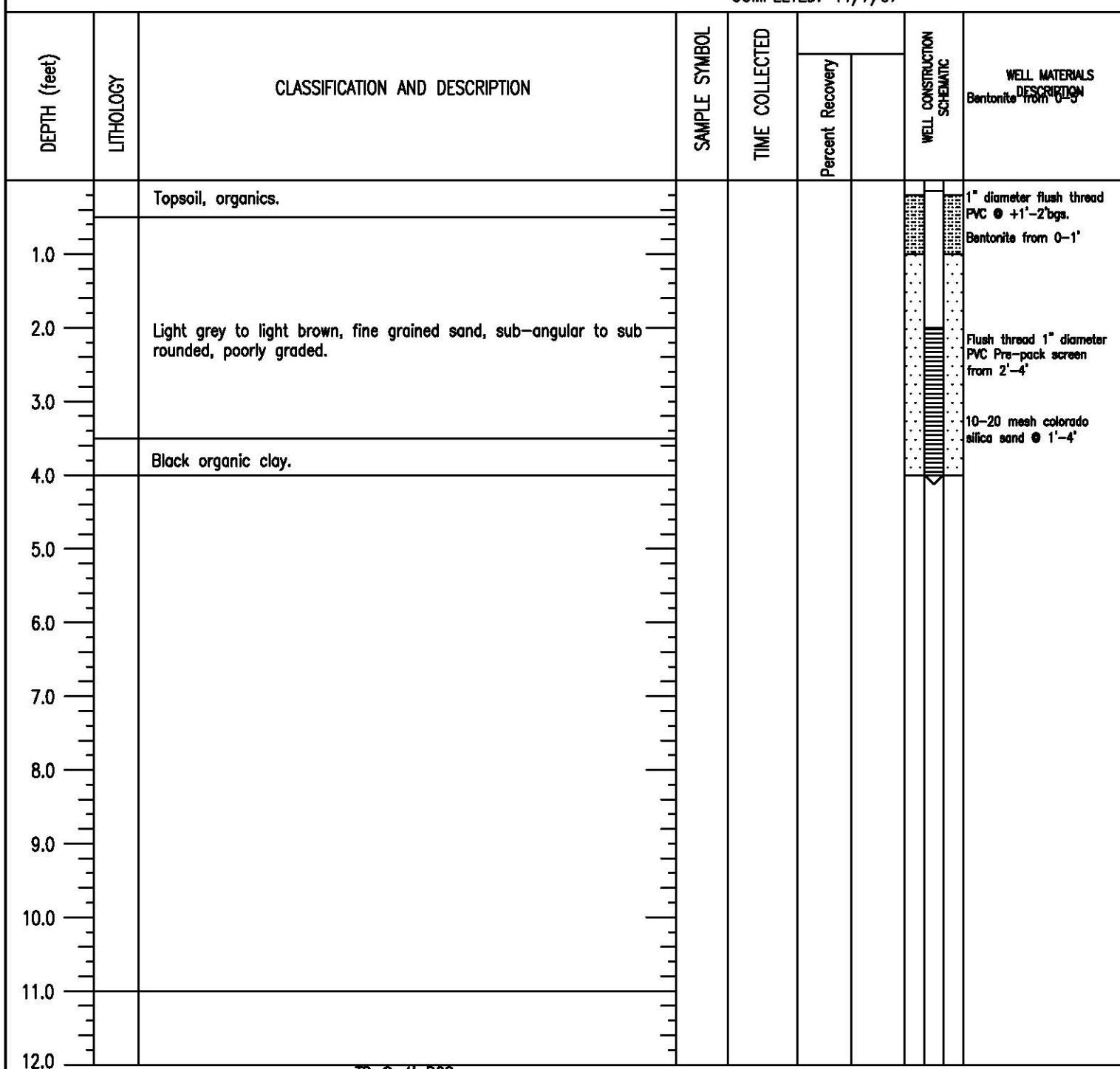
SHEET 1 of 1

LOCATION: N 7435073.24, E 1646162.79

DRILLING CONTRACTOR: Clement Drilling and Geophysical

DRILLING METHOD: direct push (sampling),
 8.25-inch O.D. hollow-stem auger.ELEVATION: 6456.99' white casing top,
 6457.16' black casing top.(ft) GROUNDWATER: ~ 3.51' below top of black casing -
 DATE: HOLE STARTED: 11/7/07 (11/19/07)

COMPLETED: 11/7/07



Soil Logging Sample Location



Laboratory Sample Location

MONITORING WELL/BORING NO. P2-2a

PROJECT: Lower Silver Creek

PROJECT NO: 1158520004.100

LOGGED BY: Chris Hayes

REMARKS:

SHEET 1 of 1

LOCATION: N 7433008.71, E 1646207.95

DRILLING CONTRACTOR: Clement Drilling and Geophysical

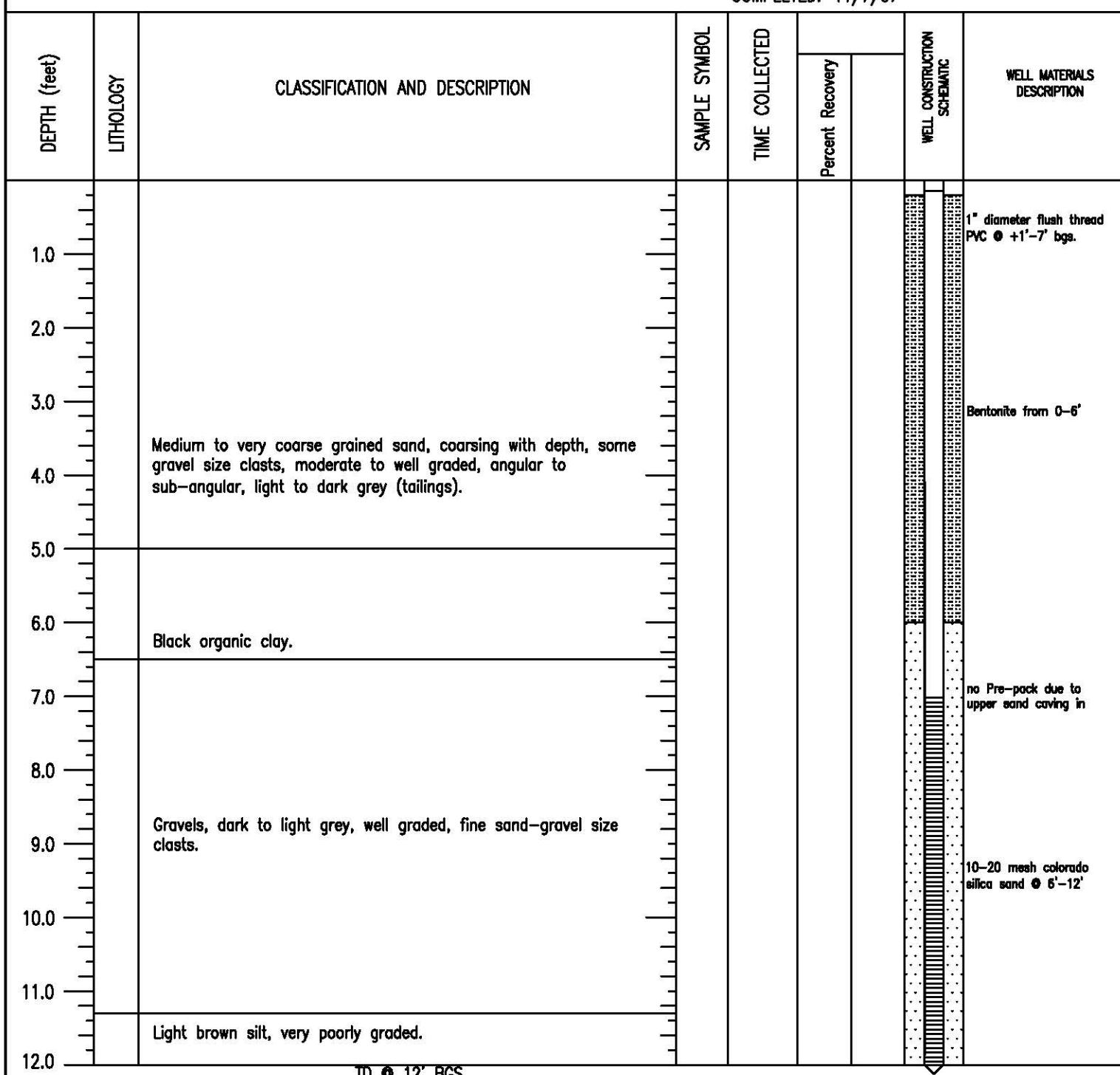
DRILLING METHOD: direct push (sampling),
8.25-inch O.D. hollow-stem auger.ELEVATION: 6466.48' white casing top,
6466.80' black casing top.

(ft) GROUNDWATER: ~ 4.56' below top of black casing -

DATE: HOLE STARTED: 11/7/07

(11/19/07)

COMPLETED: 11/7/07



Soil Logging Sample Location



Laboratory Sample Location

MONITORING WELL/BORING NO. P2-2b

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: N 7433008.56, E 1646207.12

PROJECT NO: 1158520004.100

DRILLING CONTRACTOR: Clement Drilling and Geophysical

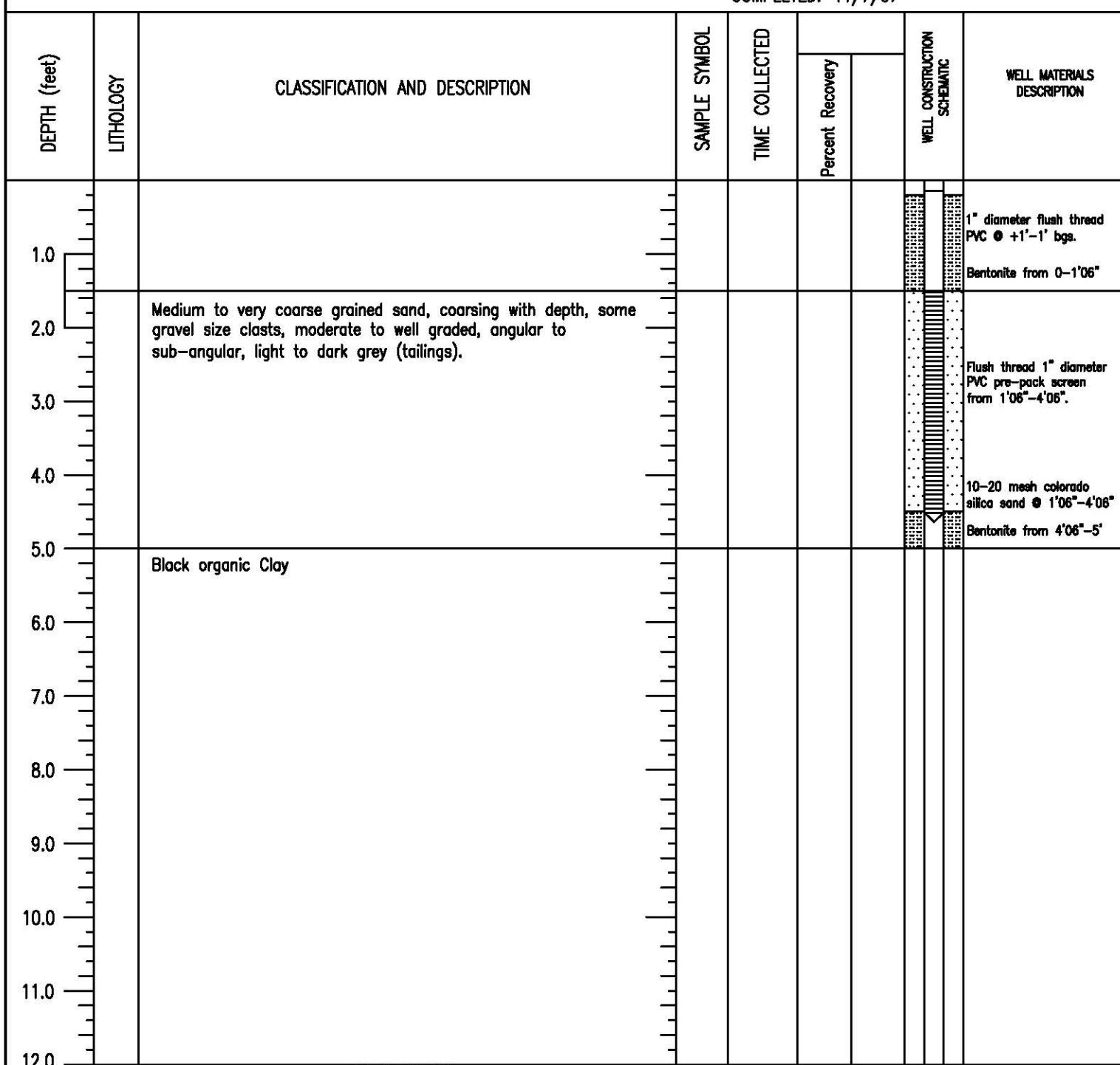
LOGGED BY: Chris Hayes

DRILLING METHOD: direct push (sampling),
8.25-inch O.D. hollow-stem auger.

REMARKS:

ELEVATION: 6466.28' white casing top,
6466.80' black casing top.(ft) GROUNDWATER: ~ 4.21' below top of black casing -
DATE: HOLE STARTED: 11/7/07 (11/19/07)

COMPLETED: 11/7/07



Soil Logging Sample Location



Laboratory Sample Location

P2-2b



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. P2-3a

PROJECT: Lower Silver Creek

PROJECT NO: 1158520004.100

LOGGED BY: Chris Hayes

REMARKS:

SHEET 1 of 1

LOCATION: N 7433081.77, E 1646534.95

DRILLING CONTRACTOR: Clement Drilling and Geophysical

DRILLING METHOD: direct push (sampling),
8.25-inch O.D. hollow-stem auger.ELEVATION: 6466.53' white casing top,
6467.35' black casing top.

(ft) GROUNDWATER: ~ 5.10' below top of black casing -

DATE: HOLE STARTED: 11/7/07

(11/19/07)

COMPLETED: 11/7/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED	WELL CONSTRUCTION SCHEMATIC		WELL MATERIALS DESCRIPTION
					Percent Recovery		
1.0		Topsoil, organics, light brown.					1" diameter flush thread PVC @ +1'-5" bgs.
2.0		Sand, medium sand fining to silt with depth, light grey to light brown, poorly to moderately graded, likely tailings..					Bentonite from 0-4'
3.0							
4.0		Black to dark brown organic clay, thin layer of peat at upper boundary, bottom 2-3" starting to turn grey with a little silt.					
5.0							
6.0							
7.0		Gravels, light to dark grey, well graded, medium sand to cobbles up to 5 mm in diameter.					Flush thread 1" diameter PVC Pre-pack screen from 5'-10'
8.0							
9.0							
10.0		Fine to very firm sand, poorly graded, light brown, rounded grains.					10-20 mesh colorado silica sand @ 4'-10'
11.0							
12.0							

TD @ 10' BGS



Soil Logging Sample Location



Laboratory Sample Location

MONITORING WELL/BORING NO. P2-3b

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: N 7433081.64, E 1646534.21

PROJECT NO: 1158520004.100

DRILLING CONTRACTOR: Clement Drilling and Geophysical

LOGGED BY: Chris Hayes

DRILLING METHOD: direct push (sampling),
8.25-inch O.D. hollow-stem auger.

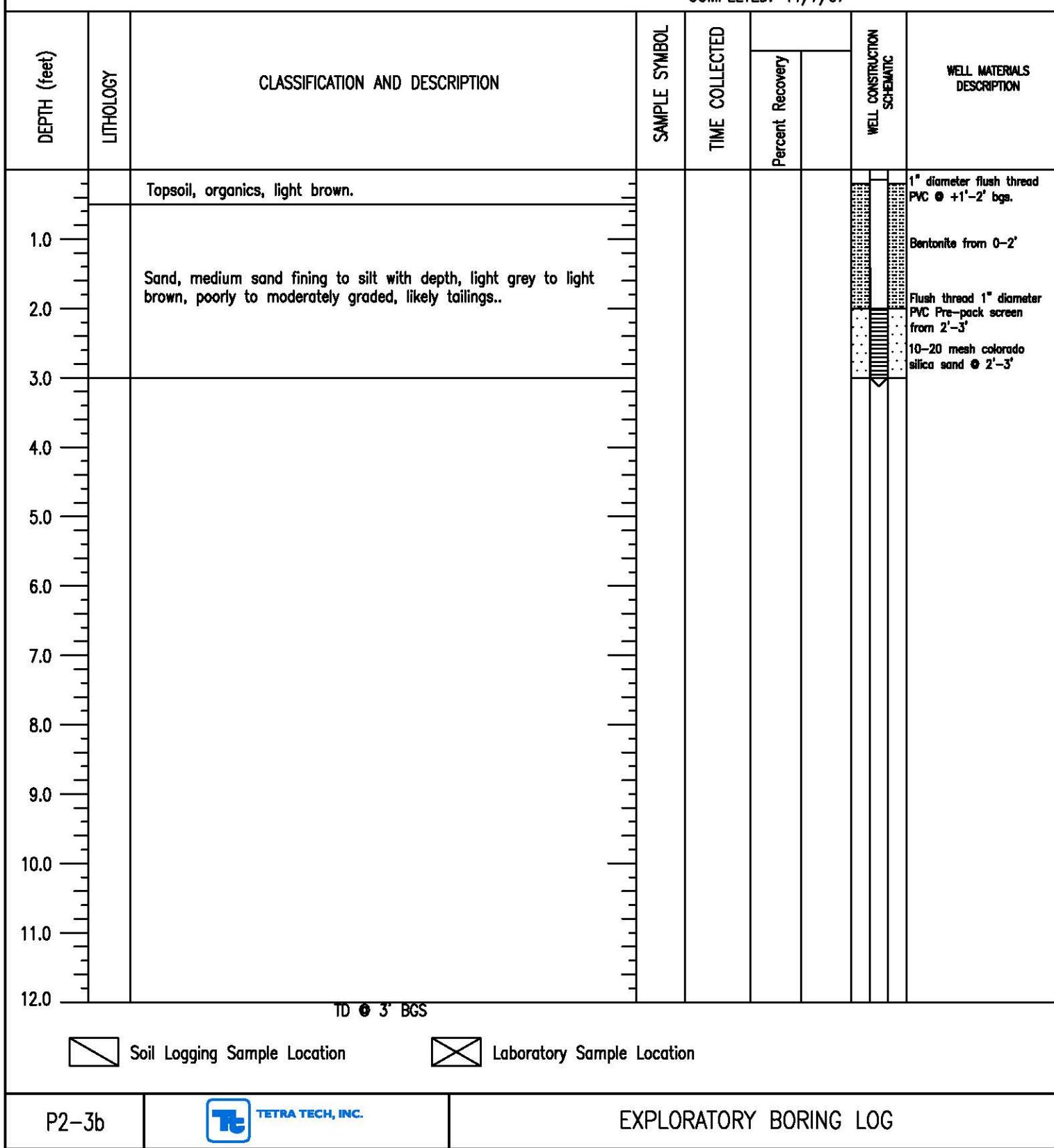
REMARKS:

ELEVATION: 6466.97' white casing top,
6467.36' black casing top.

(ft) GROUNDWATER: ~ Dry (11/19/07)

DATE: HOLE STARTED: 11/7/07

COMPLETED: 11/7/07



MONITORING WELL/BORING NO. P2-4

PROJECT: Lower Silver Creek

PROJECT NO: 1158520004.100

LOGGED BY: Chris Hayes

REMARKS:

SHEET 1 of 1

LOCATION: N 7430794.76, E 1647744.16

DRILLING CONTRACTOR: Clement Drilling and Geophysical

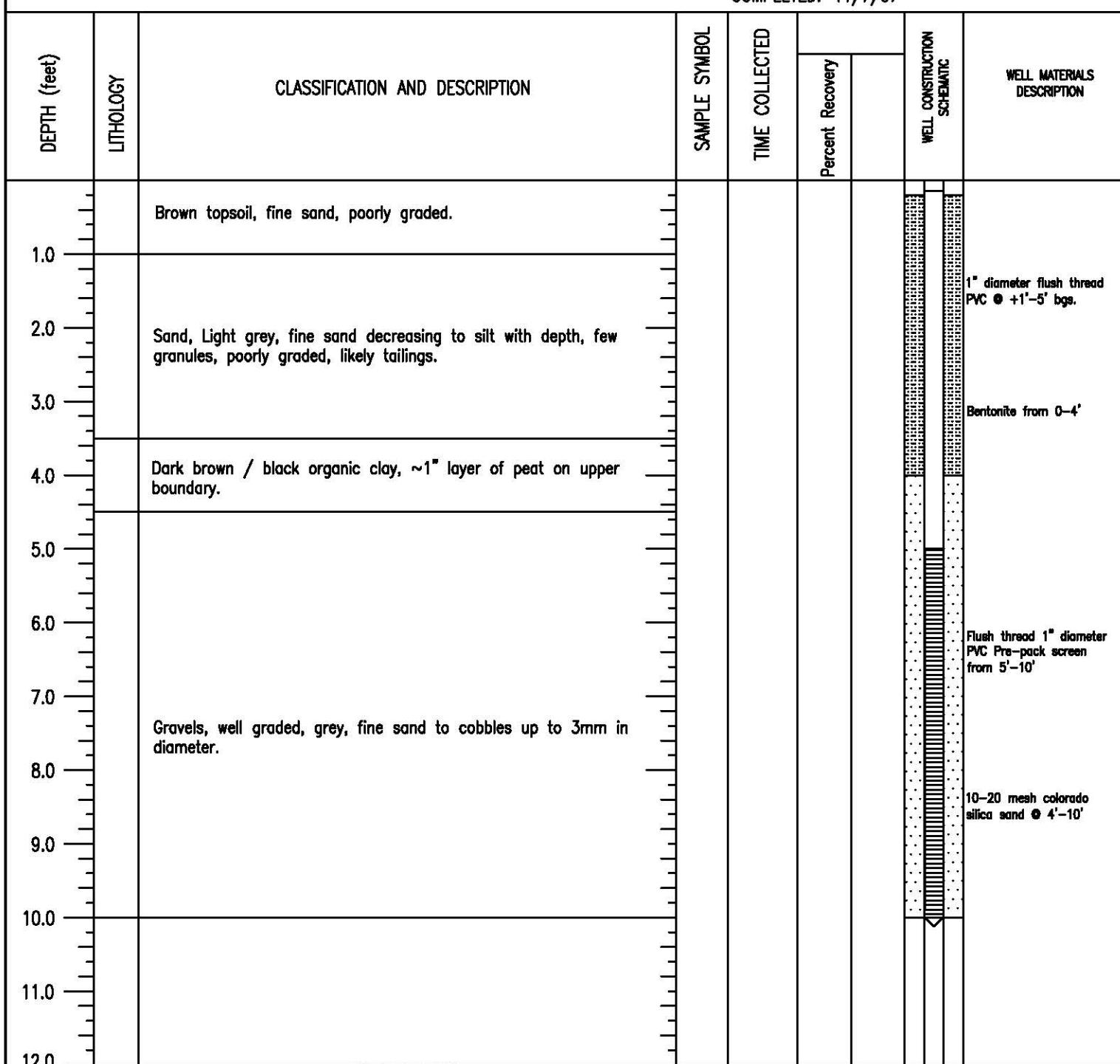
DRILLING METHOD: direct push (sampling),
8.25-inch O.D. hollow-stem auger.ELEVATION: 6481.11' white casing top,
6482.04' black casing top.

(ft) GROUNDWATER: ~ 4.56' below top of black casing -

DATE: HOLE STARTED: 11/7/07

(11/19/07)

COMPLETED: 11/7/07



Soil Logging Sample Location



Laboratory Sample Location

MONITORING WELL/BORING NO. P2-5

PROJECT: Lower Silver Creek

PROJECT NO: 1158520004.100

LOGGED BY: Chris Hayes

REMARKS:

SHEET 1 of 1

LOCATION: N 7436848.48, E 1646843.59

DRILLING CONTRACTOR: Clement Drilling and Geophysical

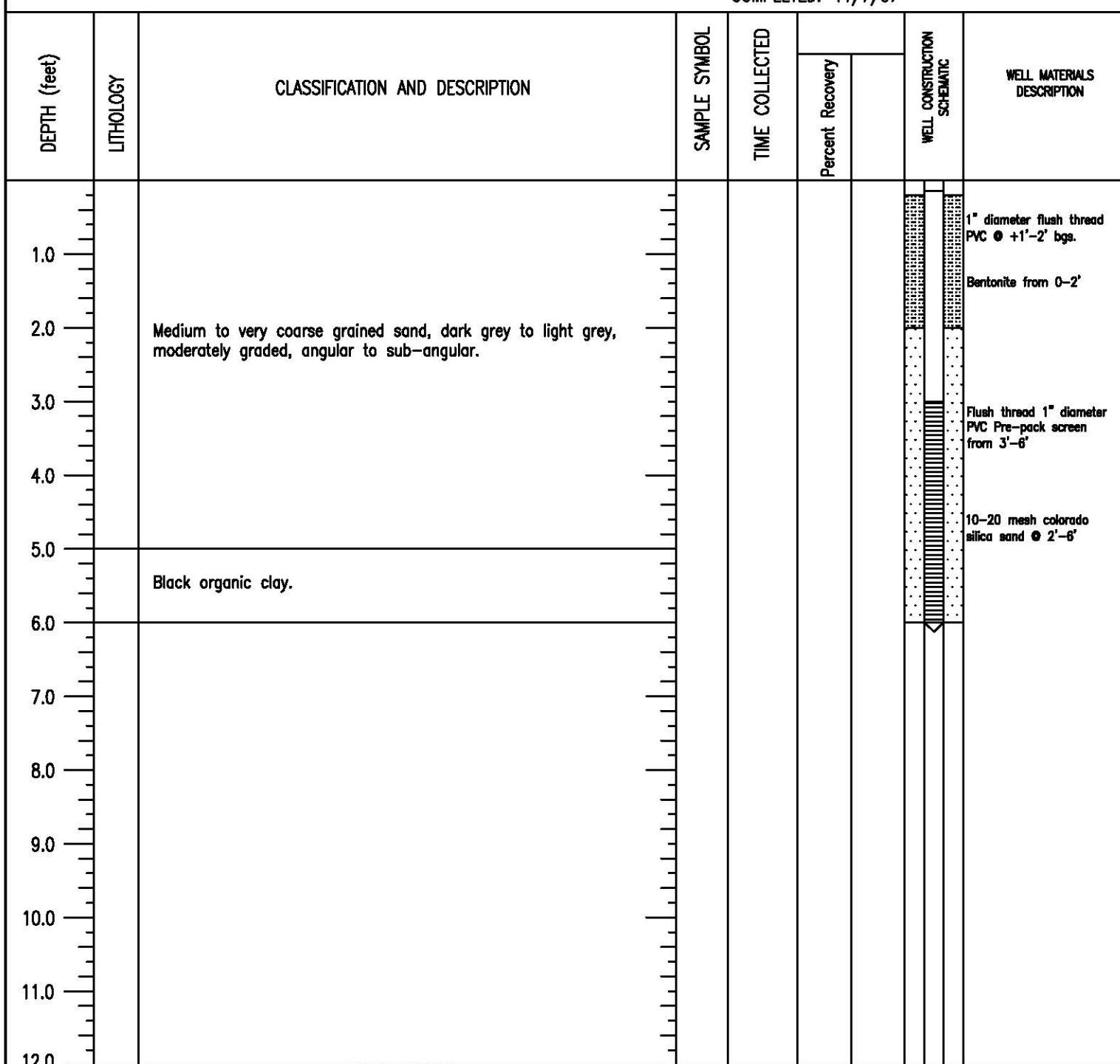
DRILLING METHOD: direct push (sampling),
8.25-inch O.D. hollow-stem auger.ELEVATION: 6449.29' white casing top,
6449.50' black casing top.

(ft) GROUNDWATER: ~ 3.78' below top of black casing -

DATE: HOLE STARTED: 11/7/07

(11/19/07)

COMPLETED: 11/7/07



Soil Logging Sample Location



Laboratory Sample Location

MONITORING WELL/BORING NO. T2FW0125

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 2

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/15/07

COMPLETED: 8/15/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
1.0		Organic soil OL/OH, clay to silt, brown, dry, trace sand.		12:41	100%	-		3" diameter ABS surface protector casing with slip cap.
2.5				12:43	100%			¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0								CETO granular bentonite @ 0-4' bgs
7.5		Well graded gravel with sand, GP, clay to fine gravel, sub-angular, light grey to reddish brown with iron oxide and green staining, very moist.		12:49	100%			¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0		Silt, ML, clay to silt, brown, moist.						Sand @ 4'-12' bgs
12.5		Silty sand, SM, silt to fine grained sand, sub-rounded, reddish brown to light brown, moist.		12:54	100%			
15.0								



Soil Logging Sample Location



Laboratory Sample Location

T2FW0125



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T1FE0125

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 1

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/15/07

COMPLETED: 8/15/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
2.5		Organic soil with sand, OL/OH, silt to medium sand, sub-rounded, brown, dry.	XX	4:41	100%		- - - - -	3" diameter ABS surface protector casing with slip cap.
5.0		Well graded sand with silt and gravel, SW-SM, silt to fine gravel, brown, moist, some iron stains.	XX	4:46	100%		- - - - -	3/4" dia flush thread, schedule 40, pvc @ +1'-5' bgs
7.5		Silt with sand, ML, silt to fine sand, rounded, green,yellow, and light grey colorations, dry, (appears to weathered volcanics, micaceous).	XX	4:53	100%		- - - - -	CETO granular bentonite @ 0-4' bgs
10.0							- - - - -	3/4" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5							- - - - -	
15.0							- - - - -	



Soil Logging Sample Location



Laboratory Sample Location

T1FE0125



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T6UE1350

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 6

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/13/07

COMPLETED: 8/13/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
0.0		Organic soil, OL/OH, clay to silt, grey, very moist.	XX	12:21	30%		- - - - -	3" diameter ABS surface protector casing with slip cap.
2.5		Fat clay with gravel, CH, clay to fine gravel, sub rounded gravel, grey, slightly moist.	XX	12:25	100%		- - - - -	¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0		Poorly graded gravel with sand, GP, medium sand to fine gravel, subangular, brown to grey with orange and green staining, very moist.	XX		100%		- - - - -	CETO granular bentonite @ 0-4' bgs
7.5			XX				- - - - -	¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0		Silt, ML, clay to silt, brown with green and grey mottling, slightly moist, variegated.	XX	12:28	100%		- - - - -	
12.5							- - - - -	
15.0							- - - - -	



Soil Logging Sample Location



Laboratory Sample Location

T6UE1350



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T6FE0375

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 6

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/13/07

COMPLETED: 8/13/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
0.0		Organic soil with sand, OL/OH, silt to fine sand, dark brown, dry.	XX	10:25	100%		-	3" diameter ABS surface protector casing with slip cap.
2.5		Gravely silt with sand, ML, silt to fine gravel, subangular, light brown, dry, trace organics.	XX	10:44	100%		-	¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0		Well graded gravel with sand and silt, GW-GM, silt to coarse gravel, sub-angular, light brown, dry.	XX	10:52	100%		-	CETO granular bentonite @ 0-4' bgs
7.5		Fat clay, OL/OH clay, brown, slightly moist, trace silt.	XX				-	¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0		Organic soil, A/CH, clay to silt, black, moist.	XX				-	
12.5							-	
15.0							-	



Soil Logging Sample Location



Laboratory Sample Location

T6FE0375



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T6FW0175

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 6

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: \approx

DATE: HOLE STARTED: 8/14/07

COMPLETED: 8/14/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
0.0		Organic soil with sand, OL/OH, silt to fine grained sand, brown to light grey, dry.		9:04	80%			3" diameter ABS surface protector casing with slip cap.
2.5								3/4" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0		Poorly graded sand, SP, medium to coarse grained sand, rounded, brown to grey, slightly moist.		9:11	100%			CETO granular bentonite @ 0-4' bgs
7.5								3/4" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0		Well graded gravel with sand, GW, medium sand to coarse gravel, sub-rounded, max up to 2" diameter, grey to black, very moist.		9:17	60%			3/4" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5								3/4" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
15.0								3/4" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs



Soil Logging Sample Location



Laboratory Sample Location

T6FW0175



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T6FW0625

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 6

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: \approx

DATE: HOLE STARTED: 8/14/07

COMPLETED: 8/14/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
2.5	Silty sand, SM, clay to medium grained sand, sub-rounded, brown to light grey, slightly moist, trace organics.		XX	9:44	60%		- - - - - / - - - - -	3" diameter ABS surface protector casing with slip cap.
5.0	Silt, ML, clay to silt, black and brown, slightly moist.		XX	9:50	60%		- - - - - / - - - - -	$\frac{3}{4}$ " dia flush thread, schedule 40, pvc @ +1'-5' bgs
7.5	Poorly graded gravel with sand, GP, coarse sand to gravel, sub-angular, max 1" diameter, grey, wet, green mottling.		XX	10:09	100%		- - - - - / - - - - -	CETO granular bentonite @ 0-4' bgs
10.0	Silt, ML, clay to silt, brown, dry.		XX	10:14	100%		- - - - - / - - - - -	$\frac{3}{4}$ " dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5								
15.0								



Soil Logging Sample Location



Laboratory Sample Location

T6FW0625



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T5UE1875

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 5

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: \approx

DATE: HOLE STARTED: 8/13/07

COMPLETED: 8/13/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
2.5	Gravely silt, ML, silt to fine gravel, subangular, brown, dry, trace organics.		X	2:36	100%	-	-	3" diameter ABS surface protector casing with slip cap.
5.0	Well graded gravel with sand, GW, fine sand to fine gravel, subangular, brown to light grey, dry.		X	2:42	100%	-	-	¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
7.5	Silt, ML, clay to silt, brown, dry, trace iron stains.		X				-	CETO granular bentonite @ 0-4' bgs
10.0	Gravely silt, ML, clay to fine gravel, sub rounded, brown, dry, trace iron stains.		X	2:46	100%	-	-	¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5								
15.0								



Soil Logging Sample Location



Laboratory Sample Location

T5UE1875



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T5UE1375

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 5

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: \approx

DATE: HOLE STARTED: 8/13/07

COMPLETED: 8/13/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED	WELL CONSTRUCTION SCHEMATIC		WELL MATERIALS DESCRIPTION
					Percent Recovery		
2.5	Sandy organic soil, OL/OH, Clay to fine sand, subrounded, dark brown, dry.			3:40	70%		3" diameter ABS surface protector casing with slip cap.
5.0	Well graded gravel with sand, GW, medium sand to coarse gravel, angular, brown to grey, wet, iron stains present.			3:47	80%		$\frac{3}{4}$ " dia flush thread, schedule 40, pvc @ +1'-5' bgs
7.5							CETO granular bentonite @ 0-4' bgs
10.0	Sandy Silt, ML, clay to fine sand, subrounded, brown, very moist, iron stains present.			3:52	60%		$\frac{3}{4}$ " dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5							
15.0							



Soil Logging Sample Location



Laboratory Sample Location

T5UE1375



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T5FE0875

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 5

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/13/07

COMPLETED: 8/13/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
2.5		Sandy organic soil, OL/OH, clay to fine sand, subrounded, dark brown, dry.		4:22	100%			3" diameter ABS surface protector casing with slip cap.
5.0		Silt, ML, clay to silt, light brown with iron oxide staining, slightly moist.		4:27	100%			¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
7.5		Well graded gravel with silt and sand, GW-GM, silt to coarse gravel, angular, grey to light brown, moist.		4:33	100%			CETO granular bentonite @ 0-4' bgs
10.0		Silt, ML, clay to silt, light grey to brown, moist						¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5								
15.0								



Soil Logging Sample Location



Laboratory Sample Location

T5UE1375



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T5FW0175

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 5

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ~

DATE: HOLE STARTED: 8/13/07

COMPLETED: 8/13/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED	WELL CONSTRUCTION SCHEMATIC		WELL MATERIALS DESCRIPTION
					Percent Recovery		
2.5	Sandy organic soil, OL/OH, Clay to fine sand, subrounded, brown to light grey, slightly moist.		X	5:26	70%	-	3" diameter ABS surface protector casing with slip cap. 3/4" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0							CETO granular bentonite @ 0-4' bgs
7.5	Silty sand with gravel, SM, silt to coarse gravel, subangular, light grey, very moist to wet, green mottling.		X	5:32	100%	-	3/4" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0	Silt with gravel, ML clay to fine gravel, sub rounded, brown, moist.		X	5:44	100%	-	
12.5							
15.0							



Soil Logging Sample Location



Laboratory Sample Location

T5FW0175



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T4UE1375

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 4

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/14/07

COMPLETED: 8/14/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
2.5		Organic soil, OL/OH, clay to silt, brown, dry.	XX	10:55	100%		- - - - -	3" diameter ABS surface protector casing with slip cap.
5.0		Well graded gravel w/ silt and sand, GW-GM, silt to coarse gravel, angular, light brown to grey with red, orange, and yellow staining, dry.	XX	11:02	100%		- - - - -	¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
7.5		Gravely silt with sand, ML, sub angular, brown, slightly moist.	XX	11:06	100%		- - - - -	CETO granular bentonite @ 0-4' bgs
10.0			XX				- - - - -	¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5								
15.0								



Soil Logging Sample Location



Laboratory Sample Location

T4UE1375



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T4FE0875

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 4

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: \approx

DATE: HOLE STARTED: 8/14/07

COMPLETED: 8/14/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
2.5	Organic soil, OL/OH, clay to silt, brown, dry.		X	11:49	100%	-	-	3" diameter ABS surface protector casing with slip cap.
5.0	Silt with gravel, ML, clay to fine gravel, subangular, $\frac{1}{2}$ " diameter max, brown, slightly moist, orange and yellow stains.		X	11:53	100%	-	-	$\frac{3}{4}$ " dia flush thread, schedule 40, pvc @ +1'-5' bgs
7.5								CETO granular bentonite @ 0-4' bgs
10.0	Poorly graded gravel with sand, GP, medium sand to gravel, subangular, reddish brown, slightly moist, orange and yellow stains.		X	11:56	100%	-	-	$\frac{3}{4}$ " dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5								
15.0								



Soil Logging Sample Location



Laboratory Sample Location

T4FE0875



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T4FE0375

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 4

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/14/07

COMPLETED: 8/14/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
0.0		Organic soil, OL/OH, clay to silt, brown, dry.		1:50	100%			3" diameter ABS surface protector casing with slip cap.
2.5		Organic soil, OL/OH, clay, black, slightly moist.						¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0								CETO granular bentonite @ 0-4' bgs
7.5		Well graded gravel with sand, GW, medium sand to coarse gravel, angular, light grey with orange, brown, and yellow stains, very moist.		1:57	100%			¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0		Silt, ML, clay to silt, light brown, moist		2:08	100%			
12.5								
15.0								



Soil Logging Sample Location



Laboratory Sample Location

T4FE0375



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T4UW0125

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 4

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

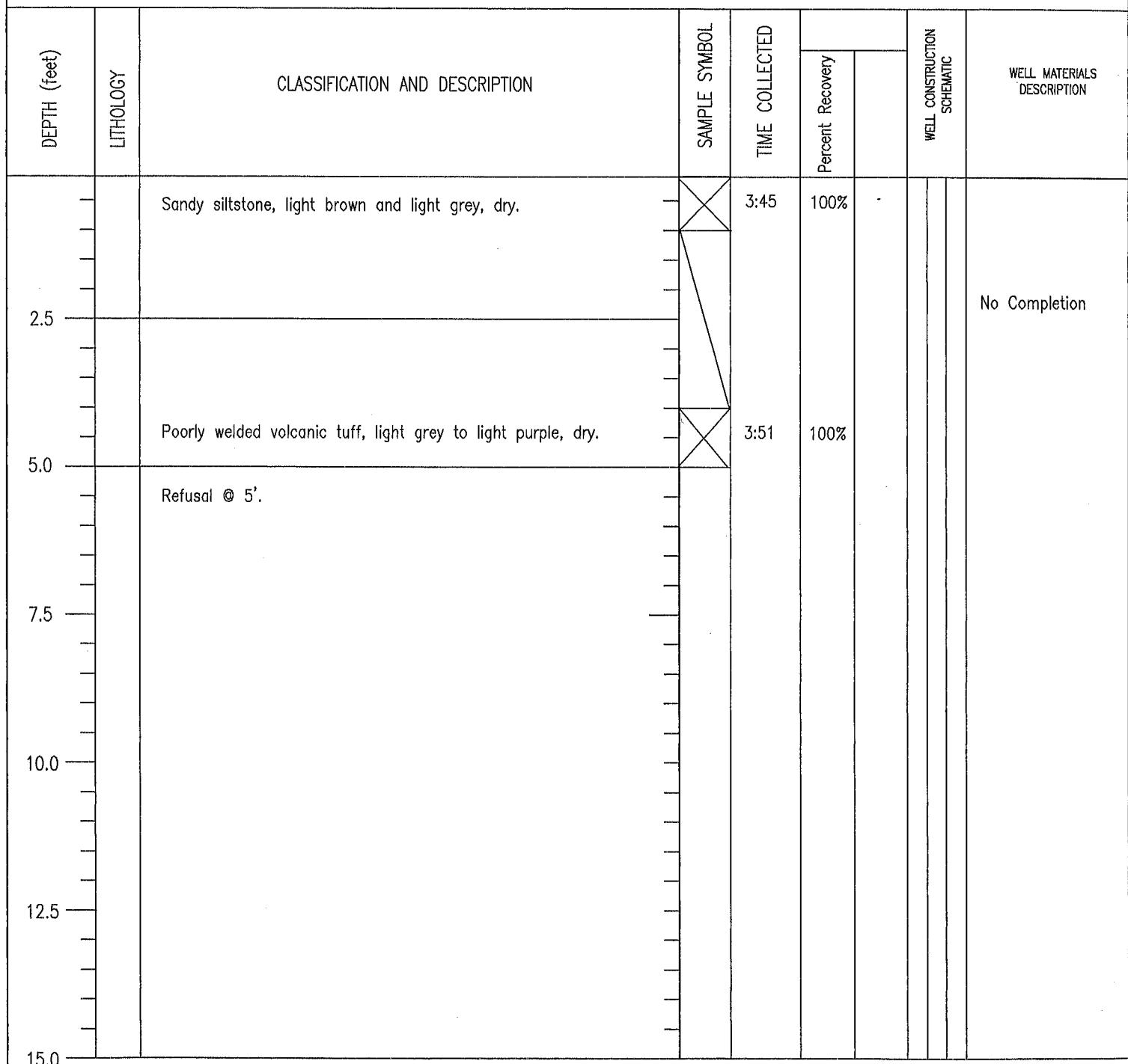
REMARKS:

ELEVATION:

(ft) GROUNDWATER: \approx

DATE: HOLE STARTED: 8/14/07

COMPLETED: 8/14/07



Soil Logging Sample Location



Laboratory Sample Location

T4UW0125



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T3FW0375

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 3

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: \approx

DATE: HOLE STARTED: 8/15/07

COMPLETED: 8/15/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED	WELL CONSTRUCTION SCHEMATIC		WELL MATERIALS DESCRIPTION
					Percent Recovery		
		Organic soil with sand, OL/OH, silt to fine sand, rounded, brown, dry.		9:12	100%		3" diameter ABS surface protector casing with slip cap.
2.5		Organic soil, OL/OH, clay, black, dry.					$\frac{3}{4}$ " dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0		Poorly graded gravel with sand, GP, coarse sand to fine gravel, subangular, variegated (yellow, reddish brown, and green), moist.		9:23	100%		CETO granular bentonite @ 0-4' bgs
7.5							
10.0		Silt, ML, clay to silt, brown, slightly moist, trace iron stains.		9:28	100%		$\frac{3}{4}$ " dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5							
15.0							



Soil Logging Sample Location



Laboratory Sample Location

T3FW0375



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T3FE0125

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 3

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ~

DATE: HOLE STARTED: 8/14/07

COMPLETED: 8/14/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED	WELL CONSTRUCTION SCHEMATIC		WELL MATERIALS DESCRIPTION
					Percent Recovery		
		Organic soil, OL/OH, clay to silt, brown, dry.	X	5:59	100%	-	3" diameter ABS surface protector casing with slip cap.
2.5		Organic soil, OL/OH, clay, black, slightly moist.	X		-	-	¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0		Well graded gravel with sand, GW, medium sand to coarse gravel, angular, grey to brown with green and iron oxide staining, wet, variegated.	X	6:07	100%	-	CETO granular bentonite @ 0-4' bgs
7.5			X		-	-	¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0		Poorly graded sand with silt and gravel, SP-SM, silt to fine gravel, sub rounded, reddish brown, wet.	X	6:10	100%	-	
12.5							
15.0							



Soil Logging Sample Location



Laboratory Sample Location

T3FE0125



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T3UE0625

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 3

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/14/07

COMPLETED: 8/14/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
0.0		Organic soil with gravel, OL/OH silt to fine gravel, brown, dry.	XX	4:26	100%		- - - - -	3" diameter ABS surface protector casing with slip cap.
2.5			XX				- - - - -	¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0		Sandy silt with gravel, ML, silt to cobble, sub-angular, 2" diameter maximum size, brown to light grey, dry, some staining.	XX	4:51	100%		- - - - -	CETO granular bentonite @ 0-4' bgs
7.5			XX				- - - - -	¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0		Poorly graded gravel with sand, GP, sand to fine gravel, subangular, reddish brown, slightly moist.	XX	4:53	100%		- - - - -	
12.5							- - - - -	
15.0							- - - - -	



Soil Logging Sample Location



Laboratory Sample Location

T3UE0625



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T3UE1125

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 3

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: 22

DATE: HOLE STARTED: 8/15/07

COMPLETED: 8/15/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED	WELL CONSTRUCTION SCHEMATIC		WELL MATERIALS DESCRIPTION
					Percent Recovery		
2.5		Organic soil, OL/OH, clay to silt, brown, dry.	X	8:16	100%		3" diameter ABS surface protector casing with slip cap.
5.0		Poorly graded gravel with sand, GP, coarse sand to fine gravel, variegated yellow, orange, and brown, dry.	X	8:24	100%		¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
7.5			X				CETO granular bentonite @ 0-4' bgs
10.0			X	8:27	100%		¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5							
15.0							



Soil Logging Sample Location



Laboratory Sample Location

T3UE1125



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T2FW0375

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 2

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/15/07

COMPLETED: 8/15/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
		Organic soil OL/OH, brown, dry.	✗	1:34	100%		-	3" diameter ABS surface protector casing with slip cap.
2.5		Organic soil, OL/OH, clay, black, dry.	✗				-	¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0		Poorly graded sand with gravel, SP, medium sand to fine gravel, sub angular, brown to light grey, moist.	✗	1:40	100%		-	CETO granular bentonite @ 0-4' bgs
7.5			✗				-	¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0		Silt, ML, clay to silt, dark brown, slightly moist, trace iron and green stains.	✗	1:44	100%		-	
12.5								
15.0								



Soil Logging Sample Location



Laboratory Sample Location

T2FW0375



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T2FE0125

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 2

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/15/07

COMPLETED: 8/15/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED	WELL CONSTRUCTION SCHEMATIC		WELL MATERIALS DESCRIPTION
					Percent Recovery		
0.0		Organic soil OL/OH, clay to silt, light brown to black, dry.	XX	11:31	100%	-	3" diameter ABS surface protector casing with slip cap.
2.5							¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0		Poorly graded gravel with sand, GP, medium sand to fine gravel, sub-angular, light grey to dark brown with red and green staining, moist.	XX	11:35	100%	-	CETO granular bentonite @ 0-4' bgs
7.5							¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0		Silt, ML, clay to silt, light grey, moist, trace green stains.	XX	12:00	100%	-	Sand @ 4'-13' bgs
12.5		Poorly graded sand with gravel, SP, medium sand to fine gravel, sub-rounded, reddish brown, slightly moist.	XX				
15.0							



Soil Logging Sample Location



Laboratory Sample Location

T2FE0125



TETRA TECH, INC.

EXPLORATORY BORING LOG

MONITORING WELL/BORING NO. T2UE0625

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 2

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/15/07

COMPLETED: 8/15/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED			WELL CONSTRUCTION SCHEMATIC	WELL MATERIALS DESCRIPTION
					Percent Recovery			
0.0		Organic soil with sand, OL/OH, silt to fine sand, sub-rounded, brown, dry.	XX	10:38	100%		- - - - -	3" diameter ABS surface protector casing with slip cap.
2.5			XX				- - - - -	3/4" dia flush thread, schedule 40, pvc @ +1'-5' bgs
5.0		Poorly graded sand with gravel, SP, coarse sand to fine gravel, sub-angular, brown, dry.	XX	10:51	100%		- - - - -	CETO granular bentonite @ 0-4' bgs
7.5			XX				- - - - -	3/4" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
10.0		Well graded gravel with silt and sand, GW-GM, silt to coarse gravel, angular, moist, slightly variegated (brown to grey).	XX	10:44	100%		- - - - -	Sand @ 4'-15' bgs
12.5			XX				- - - - -	
15.0		Silt, ML, clay to silt, brown, moist, trace gravels and organics.	XX	10:58	100%		- - - - -	

 Soil Logging Sample Location
  Laboratory Sample Location

MONITORING WELL/BORING NO. T1FW0125

SHEET 1 of 1

PROJECT: Lower Silver Creek

LOCATION: Transect 1

PROJECT NO: 75720046

DRILLING CONTRACTOR: Clement Drilling

LOGGED BY: Hayes, Chris

DRILLING METHOD: direct push

REMARKS:

ELEVATION:

(ft) GROUNDWATER: ≈

DATE: HOLE STARTED: 8/15/07

COMPLETED: 8/15/07

DEPTH (feet)	LITHOLOGY	CLASSIFICATION AND DESCRIPTION	SAMPLE SYMBOL	TIME COLLECTED	WELL CONSTRUCTION SCHEMATIC		WELL MATERIALS DESCRIPTION
					Percent Recovery		
2.5		Organic soil OL/OH, silt, brown, dry.	X	3:47	60%	-	3" diameter ABS surface protector casing with slip cap.
5.0		Poorly graded sand with gravel, SP, medium sand to fine gravel, sub angular, dark grey to dark brown with green stains, wet.	X	3:54	50%	-	¾" dia flush thread, schedule 40, pvc @ +1'-5' bgs
7.5			X				CETO granular bentonite @ 0-4' bgs
10.0			X				¾" dia flush thread, schedule 40, 10 slot, 20-40 mesh silica sand, pre-pack screen @ 5'-10' bgs
12.5		Silt with sand, ML, silt to medium sand, sub rounded, light brown, dry.	X	4:02	75%	-	Sand @ 4'-12' bgs
15.0			X				



Soil Logging Sample Location



Laboratory Sample Location

T1FW0125



TETRA TECH, INC.

EXPLORATORY BORING LOG

APPENDIX C

TEST PIT LOGS

APPENDIX D

ANALYTICAL DATA

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW 6 E1350

Project No: 19-3924.008.00		Location: Silver Creek, Utah		Page / of /			
Date: <u>8/15/07</u>	Weather Conditions: 85 - 90 ° F, mostly sunny		Personnel: Brianna Shanklin Sam Wilkes				
Comments: This well was placed in irrigation ditch							
INSTRUMENTS USED							
Instrument	Manufacturer/Model	Serial No.	Calibration				
Water Level Probe	Slope Indicator / 51453	10318					
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ 25 °C Reading _____	Slope: 96%			
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____				
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: 447 uS @ 25 °C Reading 425				
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____				
Temperature							
Other:							
Filtration	0.45 micron in-line high capacity disposable filter.						
WELL PURGING INFORMATION							
Casing Diameter (inches): 1	Borehole Diameter (inches): 1.5	Screened Interval (ft. BGL):					
Depth to Water (ft below MP):	Total Depth (ft):	Casing Volume (gal): (gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)					
Purging Method: peristaltic pumping							
Comments: Monitoring point (MP) is the top of the PVC well casing.							
Date/ Time	Vol. Purged (gal)	Depth to Water (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Appearance (color, sediment, etc.)	Comments
<u>8/15/07</u>	<u>4 well volume</u>						
<u>16:45</u>							
Cumulative Volume Purged: (gallons)					(casing vol)		
WELL SAMPLING INFORMATION							
Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 uM Disposable Filter							
Comments:							
SAMPLING MEASUREMENTS:							
Date/ Time	Depth to Water (feet below MP)	Depth Sampled (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Other	Comments
<u>8/15/07</u>		<u>7.30</u>	<u>10010</u>	<u>15.0 °C</u>			
<u>16:45</u>							
SAMPLE HANDLING:							
Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments	
	Volume (ml)	Bottle Composition	Quantity				
<u>8/15/07</u>	500 ml	LDPE - White color code	1	No	None	ACZ - Total iron	
<u>16:45</u>	125 ml	LDPE - Green color code	1	Yes	HNO ₃	ACZ	
	250 mL	LDPE - Plain	1	Yes	None	ESAT for sulfate	
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals	
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals	
Field QA/QC Samples Collected (type, Sample No.):							
Equipment Decontamination: All disposable equipment was used.							
Waste Disposal: Nonhazardous disposal in standard garbage							
Signature of Field Personnel: <u>Brianna Shanklin</u>				TETRA TECH RMC Longmont, CO (303) 772-5282			

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW60625

Project No: 19-3924.008.00

Location: Silver Creek, Utah

Page _____ of _____

Date: 8/15/07

Weather Conditions: 85 - 90 ° F, mostly sunny

Personnel: Brianna Shanklin
Sam Wilkes

Comments:

Well was dry.

INSTRUMENTS USED

Instrument	Manufacturer/Model	Serial No.	Calibration	
Water Level Probe	Slope Indicator / 51453	10318		
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ _____ °C Reading _____	Slope:
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____	
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: _____ uS @ 25 °C Reading _____	
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____	
Temperature				
Other:				

Filtration 0.45 micron in-line high capacity disposable filter.

WELL PURGING INFORMATION

Casing Diameter (inches):	1	Borehole Diameter (inches):	1.5	Screened Interval (ft. BGL):
Depth to Water (ft below MP):		Total Depth (ft):		Casing Volume (gal): (gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)

Purging Method: peristaltic pumping

Comments: Monitoring point (MP) is the top of the PVC well casing.

Cummulative Volume Purged: _____ (gallons) _____ (casing vol)

WELL SAMPLING INFORMATION

Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 μ M Disposable Filter

Comments:

SAMPLING MEASUREMENTS:

SAMPLE HANDLING:

Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments
	Volume (ml)	Bottle Composition	Quantity			
	500 mL	LDPE - White color code	1	No	None	ACZ - Total iron
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	ACZ
	250 mL	LDPE- Plain	1	Yes	None	ESAT for sulfate
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Signature of Field Personnel:

TETRA TECH RMC

Longmont, CO (303) 772-5282

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW 1, E 0375

Project No: 19-3924.008.00		Location: Silver Creek, Utah				Page 1 of 1	
Date: 8/15/07	Weather Conditions: 85 - 90 ° F, mostly sunny				Personnel: Brianna Shanklin Sam Wilkes		
Comments: Only able to obtain dissolved metals; not recharging							
INSTRUMENTS USED							
Instrument	Manufacturer/Model	Serial No.		Calibration			
Water Level Probe	Slope Indicator / 51453	10318					
pH Meter	Orion 4 Star	002600		Std: 4 7 10 @ 26.3 °C Reading _____			Slope: 9% /
pH Meter	Orion 261	1324931		Std: 4 7 10 @ _____ °C Reading _____			
Specific Conductance Meter	Cole-Parmer CON 400	321739		Std: 447 uS @ 25 °C Reading 425			
Specific Conductance Meter	Cole-Parmer CON 400	61654		Std: _____ uS @ 25 °C Reading _____			
Temperature							
Other:							
Filtration	0.45 micron in-line high capacity disposable filter.						
WELL PURGING INFORMATION							
Casing Diameter (inches): 1	Borehole Diameter (inches): 1.5	Screened Interval (ft. BGL):					
Depth to Water (ft below MP):	Total Depth (ft):	Casing Volume (gal): (gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)					
Purging Method:	peristaltic pumping						
Comments: Monitoring point (MP) is the top of the PVC well casing.							
Date/ Time	Vol. Purged (gal)	Depth to Water (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Appearance (color, sediment, etc.)	Comments
8/15/07 16:00	2 Well Volumes						
Cumulative Volume Purged:		(gallons)			(casing vol)		
WELL SAMPLING INFORMATION							
Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 μm Disposable Filter							
Comments:							
SAMPLING MEASUREMENTS:							
Date/ Time	Depth to Water (feet below MP)	Depth Sampled (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Other	Comments
8/15/07 16:55							
SAMPLE HANDLING:							
Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments	
	Volume (ml)	Bottle Composition	Quantity				
8/15/07 16:55	-500 mL LDPE - White color code	1	No	None	ACZ - Total iron		
	-125 mL LDPE - Green color code	1	Yes	HNO ₃	ACZ		
	250 mL LDPE - Plain	1	Yes	None	ESAT for sulfate		
	250 mL LDPE - Red color code	1	No	HNO ₃	GLP - Total metals		
	125 mL LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals		
Field QA/QC Samples Collected (type, Sample No.):							
Equipment Decontamination: All disposable equipment was used.							
Waste Disposal:	Nonhazardous disposal in standard garbage						
Signature of Field Personnel:	Brianna (Shanklin)						
				TETRA TECH RMC			
				Longmont, CO (303) 772-5282			

GROUNDWATER SAMPLING RECORD

SAMPLE No. Gw/c WP125

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW5E1875

Project No: 19-3924.008.00		Location: Silver Creek, Utah			Page 1 of 1		
Date: 8/15/07	Weather Conditions: 85 - 90 ° F, mostly sunny			Personnel: Brianna Shanklin Sam Wilkes			
Comments: Located just west of rail trail							
INSTRUMENTS USED							
Instrument	Manufacturer/Model	Serial No.	Calibration				
Water Level Probe	Slope Indicator / 51453	10318					
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ 21.9 °C Reading _____	Slope: 96%			
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____				
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: 447 uS @ 25 °C Reading 429				
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____				
Temperature							
Other:							
Filtration	0.45 micron in-line high capacity disposable filter.						
WELL PURGING INFORMATION							
Casing Diameter (inches): 1	Borehole Diameter (inches): 1.5	Screened Interval (ft. BGL):					
Depth to Water (ft below MP): 9.6'	Total Depth (ft):	Casing Volume (gal): (gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)					
Purging Method: peristaltic pumping							
Comments: Monitoring point (MP) is the top of the PVC well casing.							
Date/ Time	Vol. Purged (gal)	Depth to Water (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Appearance (color, sediment, etc.)	Comments
8/15/07 10:30	2 well volumes					cloudy, muddy	
Cumulative Volume Purged:			(gallons)	(casing vol)			
WELL SAMPLING INFORMATION							
Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 uM Disposable Filter							
Comments:							
SAMPLING MEASUREMENTS:							
Date/ Time	Depth to Water (feet below MP)	Depth Sampled (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Other	Comments
8/15/07 12:00	9.6'	10.6'	6.60	1333	22.5°C		
SAMPLE HANDLING:							
Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments	
	Volume (ml)	Bottle Composition	Quantity				
8/15/07 12:00	500 ml	LDPE - White color code	1	No	None	ACZ - Total iron	
	125 ml	LDPE - Green color code	1	Yes	HNO ₃	ACZ	
	250 mL	LDPE - Plain	1	Yes	None	ESAT for sulfate	
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals	
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals	
Field QA/QC Samples Collected (type, Sample No.):							
Equipment Decontamination: All disposable equipment was used.							
Waste Disposal: Nonhazardous disposal in standard garbage							
Signature of Field Personnel: <i>Brianna Shanklin</i>				TETRA TECH RMC Longmont, CO (303) 772-5282			

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW5E1375

Project No: 19-3924.008.00		Location: Silver Creek, Utah			Page <u>1</u> of <u>1</u>		
Date: <u>8/15/07</u>	Weather Conditions: 85 - 90 ° F, mostly sunny			Personnel: Brianna Shanklin Sam Wilkes			
Comments:							
INSTRUMENTS USED							
Instrument	Manufacturer/Model	Serial No.	Calibration				
Water Level Probe	Slope Indicator / 51453	10318					
pH Meter	Orion 4 Star	002600	Std: <u>4 7 10</u> @ <u>26.3</u> °C Reading _____	Slope: <u>96 %</u>			
pH Meter	Orion 261	1324931	Std: <u>4 7 10</u> @ _____ °C Reading _____				
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: <u>447</u> uS @ 25 °C Reading <u>4.25</u>				
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____				
Temperature							
Other:							
Filtration	0.45 micron in-line high capacity disposable filter.						
WELL PURGING INFORMATION							
Casing Diameter (inches):	1	Borehole Diameter (inches):	1.5	Screened Interval (ft. BGL):			
Depth to Water (ft below MP):		Total Depth (ft):		Casing Volume (gal): (gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)			
Purging Method:	peristaltic pumping						
Comments:	Monitoring point (MP) is the top of the PVC well casing.						
Date/ Time	Vol. Purged (gal)	Depth to Water (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Appearance (color, sediment, etc.)	Comments
<u>8/15/07</u>	<u>3 well volumes</u>						
<u>14:30</u>							
Cumulative Volume Purged:			(gallons)	(casing vol)			
WELL SAMPLING INFORMATION							
Sampling Equipment:	Geopump, Jumpit, Cflex Tubing, 0.45 uM Disposable Filter						
Comments:							
SAMPLING MEASUREMENTS:							
Date/ Time	Depth to Water (feet below MP)	Depth Sampled (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Other	Comments
<u>8/15/07</u>		<u>6.3.3</u>	<u>111</u>	<u>20.7</u>			
<u>14:40</u>							
SAMPLE HANDLING:							
Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments	
	Volume (ml)	Bottle Composition	Quantity				
<u>8/15/07</u>	500 ml	LDPE - White color code	1	No	None	ACZ - Total iron	
<u>14:40</u>	125 ml	LDPE - Green color code	1	Yes	HNO ₃	ACZ	
	250 mL	LDPE- Plain	1	Yes	None	ESAT for sulfate	
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals	
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals	
Field QA/QC Samples Collected (type, Sample No.):							
Equipment Decontamination: All disposable equipment was used.							
Waste Disposal:	Nonhazardous disposal in standard garbage						
Signature of Field Personnel:	<u>Brianna Shanklin</u>			TETRA TECH RMC Longmont, CO (303) 772-5282			

GROUNDWATER SAMPLING RECORD

SAMPLE No. G W 5 E 0875

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW5W0125

Project No: 19-3924.008.00

Location: Silver Creek, Utah

Page 1 of 1

Date: 8/15/07

Weather Conditions: 85 - 90 ° F, mostly sunny

Personnel: Brianna Shanklin
Sam Wilkes

Comments:

INSTRUMENTS USED

Instrument	Manufacturer/Model	Serial No.	Calibration
Water Level Probe	Slope Indicator / 51453	10318	
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ 26.3 °C Reading _____ Slope: 96 %
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: 447 uS @ 25 °C Reading 425
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____
Temperature			
Other:			

Filtration 0.45 micron in-line high capacity disposable filter.

WELL PURGING INFORMATION

Casing Diameter (inches):	1	Borehole Diameter (inches):	1.5	Screened Interval (ft. BGL):
Depth to Water (ft below MP):		Total Depth (ft):		Casing Volume (gal): (gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)
Purging Method:	peristaltic pumping			

Comments: Monitoring point (MP) is the top of the PVC well casing.

Date/ Time	Vol. Purged (gal)	Depth to Water (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Appearance (color, sediment, etc.)	Comments
8/15/07 15:30	5 wpt volume						

Cummulative Volume Purged: (gallons) (casing vol)

WELL SAMPLING INFORMATION

Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 uM Disposable Filter

Comments:

SAMPLING MEASUREMENTS:

Date/ Time	Depth to Water (feet below MP)	Depth Sampled (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Other	Other	Comments
8/15/07 15:40			7.15	350	15.8			15:40

SAMPLE HANDLING:

Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments
	Volume (ml)	Bottle Composition	Quantity			
8/15/07 15:40	500 ml	LDPE - White color code	1	No	None	ACZ - Total iron
	125 ml	LDPE - Green color code	1	Yes	HNO ₃	ACZ
	250 mL	LDPE- Plain	1	Yes	None	ESAT for sulfate
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Signature of Field Personnel:

Brianna Shanklin

TETRA TECH RMC

Longmont, CO (303) 772-5282

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW4E1375

GROUNDWATER SAMPLING RECORD

SAMPLE No. 6W4E 0875

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW^bE 0375

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Signature of Field Personnel:

Brunna Shanks

TETRA TECH RMC

Longmont, CO (303) 772-5282

GROUNDWATER SAMPLING RECORD

SAMPLE No. 6W4W0125

Project No: 19-3924.008.00

Location: Silver Creek, Utah

Page _____ of _____

Date: 8/14/07

Weather Conditions: 85 - 90 ° F mostly sunny

Personnel: Brianna Shanklin
Sam Wilkes

Comments:

Driller hit bedrock. Well not installed.

INSTRUMENTS USED

Instrument	Manufacturer/Model	Serial No.	Calibration	
Water Level Probe	Slope Indicator / 51453	10318		
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ _____ °C Reading _____	Slope:
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____	
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: _____ uS @ 25 °C Reading _____	
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____	
Temperature				
Other				

0.45 micron in-line high capacity disposable filter.

WELL PURGING INFORMATION

Casing Diameter (inches):	1	Borehole Diameter (inches):	1.5	Screened Interval (ft. BGL):	
Depth to Water (ft below MP):		Total Depth (ft):		Casing Volume (gal):	(gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)

Purging Method: peristaltic pumping

Comments: Monitoring point (MP) is the top of the PVC well casing.

Cumulative Volume Purged: _____ (gallons) _____ (casing vol.)

WELL SAMPLING INFORMATION

Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 µM Disposable Filter

Comments:

SAMPLING MEASUREMENTS:

SAMPLE HANDLING

Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments
	Volume (ml)	Bottle Composition	Quantity			
	500 mL	LDPE - White color code	1	No	None	ACZ - Total iron
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	ACZ
	250 mL	LDPE- Plain	1	Yes	None	ESAT for sulfate
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Signature of Field Personnel:

TETRA TECH RMC

Longmont CO (303) 772-5282

GROUNDWATER SAMPLING RECORD

SAMPLE NO. 6W3E1125

Project No: 19-3924.008.00

Location: Silver Creek, Utah

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Date: 8/11/07

Weather Conditions: 85 - 90 ° F, mostly sunny

Personnel: Brianna Shanklin
Sam Wilkes

Comments:

INSTRUMENTS USED

Instrument	Manufacturer/Model	Serial No.	Calibration
Water Level Probe	Slope Indicator / 51453	10318	
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ 20 °C Reading _____ Slope: 94%
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: 447 uS @ 25 °C Reading 433
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____
Temperature			
Other:			

0.45 micron in-line high capacity disposable filter.

WELL PURGING INFORMATION

Casing Diameter (inches): 1 Borehole Diameter (inches): 1.5 Screened Interval (ft. BGL):

Depth to Water (ft) below MPV: _____ Total Depth (ft): _____ Casino Volume (gal): _____ (gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)

Purging Method: peristaltic pumping

Comments: Monitoring point (MP) is the top of the PVC well casing.

Cumulative Volume Purged: _____ (gallons) _____ (casing vol)

WELL SAMPLING INFORMATION

Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 μ M Disposable Filter

Comments:

SAMPLING MEASUREMENTS:

SAMPLE HANDLING:

Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments
	Volume (ml)	Bottle Composition	Quantity			
8/16/07 11:05	500 ml	LDPE - White color code	1	No	None	ACZ - Total iron
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	ACZ
	250 mL	LDPE- Plain	1	Yes	None	ESAT for sulfate
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Waste Disposal:

~~Harmful wastes disposal in Standard garbage~~
Branna Shanks

TETRA TECH RMC

Longmont CO (303) 772-5282

GROUNDWATER SAMPLING RECORD

SAMPLE No. 6W3E0625

Project No: 19-3924.008.00

Location: Silver Creek, Utah

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Date: 8/16/07

Weather Conditions: 85 - 90 ° F, mostly sunny

Personnel: Brianna Shanklin
Sam Wilkes

Comments:

Well Dry

INSTRUMENTS USED

Instrument	Manufacturer/Model	Serial No.	Calibration
Water Level Probe	Slope Indicator / 51453	10318	
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ 20 °C Reading _____ Slope: 94.0
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: 444 uS @ 25 °C Reading 433
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____
Temperature			
Other:			

0.45 micron in-line high capacity disposable filter

WELL PLUGGING INFORMATION

Casing Diameter (inches): 1 Borehole Diameter (inches): 1.5 Screened Interval (ft. BGL):
 Depth to Water (ft. below MB): Total Depth (ft.): Casing Volume (gal): (sq ft): 1.5" = 0.80; 2" = 0.16; 3" = 0.37; 4" = 0.65)

Purging Method: peristaltic pumping

Comments: Monitoring point (MP) is the top of the PVC well casing.

Cumulative Volume Purged: _____ (gallons) _____ (casing vol.)

WELL SAMPLING INFORMATION

Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 μ M Disposable Filter

Comments:

SAMPLING MEASUREMENTS:

SAMPLE HANDLING:

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Signature of Field Personnel:

TETRA TECH RMC

Longmont, CO (303) 772-5282

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW3E0125

Project No: 19-3924.008.00

Location: Silver Creek, Utah

Page _____ of _____

Date: 8/16/03

Weather Conditions: 85 - 90 ° F, mostly sunny

Personnel: Brianna Shanklin
Sam Wilkes

Comments:

INSTRUMENTS USED

Instrument	Manufacturer/Model	Serial No.	Calibration
Water Level Probe	Slope Indicator / 51453	10318	
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ 20 °C Reading _____
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: 444 fS @ 25 °C Reading 433
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____
Temperature			
Other:			

Filtration 0.45 micron in-line high capacity disposable filter.

WELL PURGING INFORMATION

Casing Diameter (inches): 1 **Borehole Diameter (inches):** 1.5 **Screened Interval (ft. BGL):**

Depth to Water (ft below MP): **Total Depth (ft):** **Casing Volume (gal):** (gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)

Purging Method: peristaltic pumping

Comments: Monitoring point (MP) is the top of the PVC well casing.

Cummulative Volume Purged: _____ (gallons) _____ (casing vol)

WELL SAMPLING INFORMATION

Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 μ M Disposable Filter

Comments:

SAMPLING MEASUREMENTS:

SAMPLE HANDLING:

Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments
	Volume (ml)	Bottle Composition	Quantity			
8/16/07 11:40	500 ml	LDPE - White color code	1	No	None	ACZ - Total iron
	125 ml	LDPE - Green color code	1	Yes	HNO ₃	ACZ
	250 mL	LDPE- Plain	1	Yes	None	ESAT for sulfate
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Signature of Field Personnel:

Branna Shanks

TETRA TECH RMC

Longmont, CO (303) 772-5282

GROUNDWATER SAMPLING RECORD

SAMPLE No. *GW3 W0375*

Project No: 19-3924.008.00		Location: Silver Creek, Utah			Page _____ of _____		
Date:	Weather Conditions: 85 - 90 ° F, mostly sunny			Personnel: Brianna Shanklin Sam Wilkes			
Comments: <i>Well dry.</i>							
INSTRUMENTS USED							
Instrument	Manufacturer/Model	Serial No.	Calibration				
Water Level Probe	Slope Indicator / 51453	10318					
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ _____ °C Reading _____	Slope:			
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____				
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: _____ uS @ 25 °C Reading _____				
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____				
Temperature							
Other:							
Filtration	0.45 micron in-line high capacity disposable filter.						
WELL PURGING INFORMATION							
Casing Diameter (inches):	1	Borehole Diameter (inches):	1.5	Screened Interval (ft. BGL):			
Depth to Water (ft below MP):		Total Depth (ft):		Casing Volume (gal):	(gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)		
Purging Method:	peristaltic pumping						
Comments: Monitoring point (MP) is the top of the PVC well casing.							
Date/ Time	Vol. Purged (gal)	Depth to Water (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Appearance (color, sediment, etc.)	Comments
Cumulative Volume Purged: (gallons)				(casing vol)			
WELL SAMPLING INFORMATION							
Sampling Equipment:	Geopump, Jumpit, Cflex Tubing, 0.45 uM Disposable Filter						
Comments:							
SAMPLING MEASUREMENTS:							
Date/ Time	Depth to Water (feet below MP)	Depth Sampled (feet below MP)	pH	Specific Conductance (uS @ 25 deg C)	Temp (deg C)	Other	Comments
SAMPLE HANDLING:							
Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments	
	Volume (ml)	Bottle Composition	Quantity				
500 ml	LDPE - White color code	1	No	None	ACZ - Total iron		
125 ml	LDPE - Green color code	1	Yes	HNO ₃	ACZ		
250 mL	LDPE - Plain	1	Yes	None	ESAT for sulfate		
250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals		
125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals		
Field QA/QC Samples Collected (type, Sample No.):							
Equipment Decontamination: All disposable equipment was used.							
Waste Disposal:	Nonhazardous disposal in standard garbage						
Signature of Field Personnel:					TETRA TECH RMC Longmont, CO (303) 772-5282		

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW2E0625

Project No: 19-3924.008.00

Location: Silver Creek, Utah

Page _____ of _____

Date: 8/16/07

Weather Conditions: 85 - 90 ° F, mostly sunny

Personnel: Brianna Shanklin
Sam Wilkes

Comments:

INSTRUMENTS USED

Instrument	Manufacturer/Model	Serial No.	Calibration	
Water Level Probe	Slope Indicator / 51453	10318		
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ 20 °C Reading _____	Slope: 94
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____	
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: 447 uS @ 25 °C Reading 433	
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____	
Temperature				
Other:				

Filtration 0.45 micron in-line high capacity disposable filter.

WELL PURGING INFORMATION

Casing Diameter (inches):	1	Borehole Diameter (inches):	1.5	Screened Interval (ft. BGL):	
Depth to Water (ft. below MP):	Total Depth (ft):	Casing Volume (gal):		/gal ¹ 1.5" = 0.00; 2" = 0.16; 3" = 0.27; 4" = 0.65)	

Purging Method: peristaltic pumping

Comments: Monitoring point (MP) is the top of the PVC well casing.

Cumulative Volume Purged: _____ (gallons) _____ (casing vol)

WELL SAMPLING INFORMATION

Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 µM Disposable Filter

Comments:

SAMPLING MEASUREMENTS:

Date/ Time	Depth to Water (feet below MP)	Depth Sampled (feet below MP)	pH	Specific Conductance (µS @ 25 deg C)	Temp (deg C)	Other	Other	Comments
8/16/07 12:20			10.84	1534	17.0			

SAMPLE HANDLING:

Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments
	Volume (ml)	Bottle Composition	Quantity			
8/11/10 7:12:20	500 ml	LDPE - White color code	1	No	None	ACZ - Total iron
	125 ml	LDPE - Green color code	1	Yes	HNO ₃	ACZ
	250 mL	LDPE- Plain	1	Yes	None	ESAT for sulfate
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Signature of Field Personnel: *Brunna Shanks*

TETRA TECH RMC

Longmont, CO (303) 772-5282

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW2E0125

Project No: 19-3924.008.00

Location: Silver Creek, Utah

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Date: 8/16/07

Weather Conditions: 85 - 90 ° F, mostly sunny

Personnel: Brianna Shanklin
Sam Wilkes

Comments:

INSTRUMENTS USED

Instrument	Manufacturer/Model	Serial No.	Calibration
Water Level Probe	Slope Indicator / 51453	10318	
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ 20 °C Reading _____
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: 444 f uS @ 25 °C Reading 433
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____
Temperature			
Other:			

Filtration 0.45 micron in-line high capacity disposable filter.

WELL PURGING INFORMATION

Casing Diameter (inches):	1	Borehole Diameter (inches):	1.5	Screened Interval (ft. BGL):	
Depth to Water (ft. below MSL):		Total Depth (ft.):		Casing Volume (gal):	(gal/ft: 1.5" = 0.00; 2" = 0.16; 3" = 0.37; 4" = 0.65)

Pumping Method: peristaltic pumping

Comments: Monitoring point (MP) is the top of the PVC well casing.

Cumulative Volume Purged: _____ (gallons) _____ (casing vol)

WELL SAMPLING INFORMATION

Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 μ M Disposable Filter

Comments:

SAMPLING MEASUREMENTS:

SAMPLE HANDLING:

Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments
	Volume (ml)	Bottle Composition	Quantity			
8/16/07 12:50	500 ml	LDPE - White color code	1	No	None	ACZ - Total iron
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	ACZ
	250 mL	LDPE- Plain	1	Yes	None	ESAT for sulfate
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Signature of Field Personnel:

Brianna Shanks

TETRA TECH RMC

Longmont, CO (303) 772-5282

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW 2W0125

Project No: 19-3924 008 00

Location: Silver Creek, Utah

Page / of /

Date: 8/11/07

Weather Conditions: 85 - 90 ° F, mostly sunny

Personnel: Brianna Shanklin
Sam Wilkes

Comments:

INSTRUMENTS USED

INSTRUMENTS USED				
Instrument	Manufacturer/Model	Serial No.	Calibration	
Water Level Probe	Slope Indicator / 51453	10318		
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ 21 °C Reading _____	Slope: 97%
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____	
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: 447 uS @ 25 °C Reading 440	
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____	
Temperature				
Other:				

0.45 micron in-line high capacity disposable filter

WELL PURGING INFORMATION

Casing Diameter (inches):	1	Borehole Diameter (inches):	1.5	Screened Interval (ft. BGL):	
Depth to Water (ft below MP):		Total Depth (ft):		Casing Volume (gal):	(gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)

Purging Method: peristaltic pumping

Comments: Monitoring point (MP) is the top of the PVC well casing.

Cumulative Volume Poured: _____ (gallons) _____ (casing vol.)

WELL SAMPLING INFORMATION

Sampling Equipment: Geopump, Jumppit, Cflex Tubing, 0.45 µm Disposable Filter

Comments:

SAMPLING MEASUREMENTS:

SAMPLE HANDLING:

Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments
	Volume (ml)	Bottle Composition	Quantity			
8/16/107 13:15	500 ml	LDPE - White color code	1	No	None	ACZ - Total iron
	125 ml	LDPE - Green color code	1	Yes	HNO ₃	ACZ
	250 mL	LDPE- Plain	1	Yes	None	ESAT for sulfate
	250 mL	LDPE - Red color code	1	No	HNO3	CLP - Total metals
	125 mL	LDPE - Green color code	1	Yes	HNO3	CLP - Dissolved metals

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Signature of Field Personnel:

Brianna Franklin

TETRA TECH RMC

Longmont, CO (303) 772-5282

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW2W0375

GROUNDWATER SAMPLING RECORD

SAMPLE No. GW1400125

Project No: 19-3924.008.00

Location: Silver Creek, Utah

Page / of /

Date: 8/16/07

Weather Conditions: 85 - 90 ° F, mostly sunny

Personnel: Brianna Shanklin
Sam Wilkes

Comments:

INSTRUMENTS USED

INSTRUMENTS USED				
Instrument	Manufacturer/Model	Serial No.	Calibration	
Water Level Probe	Slope Indicator / 51453	10318		
pH Meter	Orion 4 Star	002600	Std: 4 7 10 @ 21 °C Reading _____	Slope: 97 %
pH Meter	Orion 261	1324931	Std: 4 7 10 @ _____ °C Reading _____	
Specific Conductance Meter	Cole-Parmer CON 400	321739	Std: 444 uS @ 25 °C Reading 440	
Specific Conductance Meter	Cole-Parmer CON 400	61654	Std: _____ uS @ 25 °C Reading _____	
Temperature				
Other:				
Filtration	0.45 micron in-line high capacity disposable filter.			

WELL PURGING INFORMATION

Casing Diameter (inches):	1	Borehole Diameter (inches):	1.5	Screened Interval (ft. BGL):	
Depth to Water (ft below MP):		Total Depth (ft):		Casing Volume (gal):	(gal/ft: 1.5" = 0.09; 2" = 0.16; 3" = 0.37; 4" = 0.65)
Purging Method:	peristaltic pumping				

Comments: Monitoring point (MP) is the top of the PVC well casing.

Cumulative Volume Purged: _____ (gallons) _____ (casing vol)

WELL SAMPLING INFORMATION

Sampling Equipment: Geopump, Jumpit, Cflex Tubing, 0.45 µM Disposable Filter

Comments:

SAMPLING MEASUREMENTS:

SAMPLE HANDLING:

Date/ Time	Aliquots			Filtered (Y/N)	Preserved (type)	Comments
	Volume (ml)	Bottle Composition	Quantity			
8/16/07 14:20	500 ml	LDPE - White color code	1	No	None	ACZ - Total iron
	125 ml	LDPE - Green color code	1	Yes	HNO ₃	ACZ
	250 mL	LDPE- Plain	1	Yes	None	ESAT for sulfate
	250 mL	LDPE - Red color code	1	No	HNO ₃	CLP - Total metals
	125 mL	LDPE - Green color code	1	Yes	HNO ₃	CLP - Dissolved metals

Field QA/QC Samples Collected (type, Sample No.):

Equipment Decontamination: All disposable equipment was used.

Waste Disposal: Nonhazardous disposal in standard garbage

Signature of Field Personnel:

Bunnia Franklin

TETRA TECH RMC

Longmont, CO (303) 772-5282



U.S. Environmental Protection Agency
Region 8
Technical and Management Services

Laboratory Services Program

Certificate of Analysis

Ref: 8TMS-L

MEMORANDUM

Date: 08/22/07

Subject: Analytical Results-- **Richardson Flats - Lower Silver Creek / SC-086**

From: Stan Christensen, EPA Region 8 Analytical Chemistry WAM

To: Stan Christensen
Superfund
8 EPR-SR

Received Sample Set(s), [Work Order : Date Received]:

[C708002 : 08/17/2007]

Attached are the analytical results for the samples received from the Richardson Flats - Lower Silver Creek sampling event, according to TDF SC-086. All analyses were performed within their method specified holding times unless otherwise noted in the following narrative.

These samples were prepared, analyzed, and verified by the Environmental Services Assistance Team Laboratory (ESAT) according to the requirements of the Technical Direction Form (TDF).

Note: The laboratory herewith transmits this deliverable to the program/project partner for determination of "final data usability" which may include data validation and data quality assessment per and in accordance with EPA QA/G-8, *Guidance on Environmental Data Verification and Data Validation*, November 2002, EPA/240/R-02/004. Laboratory data qualifiers are applied based on the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, October 2004, referred to as "NFGI".

Case Narrative**C708002**

Quality Assessment: Unless indicated by exception, the QA/QC associated with this sample set produced data within the TDF-specified criteria.

Holding Times: All samples were analyzed within their method-specified technical holding time(s).

1. Initial and Continuing calibration blanks (ICBs and CCBs).
Exceptions: None.
2. Preparation (PB) / Method blanks (MB)
Exceptions: None.
3. Interference Checks (ICSA / ICSAB) for ICP-MS and ICP-OE analyses only.
Exceptions: None.
4. Initial and Continuing calibration verification analyses (ICVs and CCVs).
Exceptions: None.
5. Laboratory Control Sample (LCS) or second source analysis or SRM.
Exceptions: None.
6. Laboratory Fortified blank (LFB) / Blank spike (BS), same source as used for the matrix spikes. PBS performed with analyses/methods requiring preparation or digestion prior to analysis.
Exceptions: None.
7. Contract Reporting Detection Limit Standard, labeled as CRA, CRDL or CRL.
Exceptions: None.
8. Laboratory Duplicate (DUP). "Source" identifies field sample duplicated in the laboratory. If either the "source" or the duplicate result is <5X the reporting limit, the %D limit of 20% does not apply.
Exceptions: None.
9. Laboratory Matrix Spike (MS) and spike duplicate (MSD). "Source" defines original field sample fortified prior to analysis. Percent recovery (%R) limits do not apply when sample concentration(s) exceed the corresponding analyte spike level by a factor of 4 or greater.
Exceptions: None.
10. Serial Dilution sample analysis (SRD). "Source" is parent field sample diluted 1:5 in the laboratory.
Performed for ICP-OE and ICP-MS metals analyses. Percent difference (%D) limits do not apply when analyte concentration(s) are below 50x the source sample's MDL (or 10x its PQL).
Exceptions: None.
11. Internal standards, criteria specified for ICP-MS analyses only, monitored at the instrument.
Exceptions: None.
12. Any calibration using more than two-points produced a correlation coefficient less than 0.995.
Exceptions: None.

Note:

The following samples had visible sediment in the sample container:

GW5E1875, GW5W0125, GW6W0125, GW6W0625, GW4E0875, GW4E0375, GW3E0125, GW2E0625, GW2E0125 and GW2W0125. All samples were filtered prior to analysis.

Traffic Report and Chain of Custody Record

Tetra Tech

1900 S. Sunset Street, Suite I-F, Longmont, CO 80501

Project:	Lower Silver Creek	Laboratory:	ESAT Laboratory	P.O. Number:	
Location:	Park City, Utah		R8TMS-L-ESAT		CHAIN OF CUSTODY
CERCLIS #:		Address:	16194 W 45th Drive		
Contact:	Brianna Shanklin		Golden, CO 80403		
Phone:	303-772-5282	Phone:		Signature	Date/Time
email:	brianna.shanklin@tetrach.com			Submitted by: <i>Brianna J. Shanklin</i>	8/16/07 3:00 PM
Action:	SI sampling	Contact:	Richard Clinkscales	Received by Lab: <i>R. Clinkscales</i>	8/17/07 @ 10:20
				Received by Analyst:	
				Returned to Lab:	

Analysis Requested	Field Number	Description of Sample	Sample Date	Sample Time	Lab #
Sulfate	GW5E1875	250 mL poly bottle, filtered, preserved on ice (no acid)	8/15/2007	12:00 •	
Sulfate	GW5E1375	250 mL poly bottle, filtered, preserved on ice (no acid)	8/15/2007	14:40	
*	GW5E1875	250 mL poly bottle, filtered, preserved on ice (no acid)	8/15/2007	15:40 •	
Sulfate	GW6E1350	250 mL poly bottle, filtered, preserved on ice (no acid)	8/15/2007	16:45	
Sulfate	GW6W0125	250 mL poly bottle, filtered, preserved on ice (no acid)	8/15/2007	17:35 •	
Sulfate	GW6W0625	250 mL poly bottle, filtered, preserved on ice (no acid)	8/15/2007	18:10 •	
Sulfate	GW4E0875	250 mL poly bottle, filtered, preserved on ice (no acid)	8/16/2007	8:55 •	
Sulfate	GW4E0375	250 mL poly bottle, filtered, preserved on ice (no acid)	8/16/2007	9:30 •	
Sulfate	GW3E1125	250 mL poly bottle, filtered, preserved on ice (no acid)	8/16/2007	11:05	
Sulfate	GW3E0125	250 mL poly bottle, filtered, preserved on ice (no acid)	8/16/2007	11:40 •	
Sulfate	GW2E0625	250 mL poly bottle, filtered, preserved on ice (no acid)	8/16/2007	12:20 •	
Sulfate	GW2E0125	250 mL poly bottle, filtered, preserved on ice (no acid)	8/16/2007	12:50 •	
Sulfate	GW2W0125	250 mL poly bottle, filtered, preserved on ice (no acid)	8/16/2007	13:15 •	
Sulfate	GW1E0125	250 mL poly bottle, filtered, preserved on ice (no acid)	8/16/2007	14:00	
Sulfate	GW1W0125	250 mL poly bottle, filtered, preserved on ice (no acid)	8/16/2007	14:20	

Samplers Signature: *Bunny Shan* **Additional Sampler(s):** *Samuel Prestes* **Traffic Report #:** **UT - 785718522 - 08162007**

Comments: Upon receipt (*) sample label does not match COC field 10 - Left mess e1020 8/17/2007 RC
- Used 10 from bottle per B. Shaw/ln-Rc

Acronyms and Definitions:

ESAT	Environmental Services Assistance Team
J	Data Estimated qualifier (also applied to all data less than PQL, greater than or equal to MDL)
MDL	Method Detection Limit
PQL	Practical Quantitation Limit (5x MDL), also known as reporting limit.
RPD	Relative Percent Difference (difference divided by the mean)
%D	Percent difference, serial dilution criteria unit, difference divided by the original result.
%R	Percent recovery, analyzed (less sample contribution) divided by true value
<	Analyte NOT DETECTED at or above the Method Detection Limit (MDL)
mg/L	Parts per million (milligrams per liter). Solids equivalent = mg/Kg.
ug/L	Parts per billion (micrograms per liter). Solids equivalent = ug/Kg.
NR	No Recovery (matrix spike) - Often seen for calcium/magnesium when their concentration exceeds the spike level by > 4x.
NFGI	USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
RE	Sample Re-analysis. Usually seen on raw data and sequences for required sample dilutions due to over-range analytes.

Method(s) Summary:

As defined in the Technical Direction Form (TDF), some or all of the methods listed below were used for the determination of the reported target analytes.

From EPA's *Methods for the Determination of Metals in Environmental Samples*, Supplement I, May 1994, dissolved, total, and/or total recoverable metals were determined by:

- Method 200.7 / 6010B using a PE Optima ICP-OE (ICP).
- Method 200.8 / 6020 using a Perkin-Elmer Elan 6000 ICP-MS.
- Method 200.2 for total recoverable metals (only) digestion.
- Method 245.1 using a Perkin-Elmer FIMS CVAA (aqueous mercury only).

From *Standard Methods for the Examination of Water and Wastewater*, 18th Edition, 1992, Method 2340B was used for the calculated hardness determination. Hardness is reported as mg (milligram) equivalent CaCO₃ per liter (L) determined as follows:

$$\text{Calculated hardness} = 2.497 * (\text{Calcium, mg/L}) + 4.118 * (\text{Magnesium, mg/L}).$$

From *EPA's Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846*,

- Method 3015A was used for microwave assisted total metals digestion.
- Method 7471B was used for mercury in solids by CVAA.

From EPA's *Determination of Inorganic Anions by Ion Chromatography*, Revision 2.1, 1993, Method 300.0 was used to determine the anions.

From EPA's *Methods for Chemical Analysis of Water and Wastes*, March 1983:

- Method 310.1 was followed for the alkalinity determination.
- Method 160.1 was followed for gravimetric total dissolved solids (TDS) determination.
- Method 160.2 was used for gravimetric total suspended solids (TSS) determination.
- Method 415.1 was used for total organic carbon (TOC) determination using either an Apollo 9000 or Phoenix 8000 Non-Dispersive IR (NDIR) system. Also known as dissolved organic carbon (DOC) when performed on the dissolved sample fraction.

The quality control procedures listed in the TDF request were utilized by ESAT to verify accuracy of the results and to evaluate any matrix interferences.

Project Name: Richardson Flats - Lower Silver Creek
TDF #: SC-086

Certificate of Analysis

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW5E1875 EPA Tag No.:	Date / Time Sampled: 08/15/07 12:00 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-01 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	245	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW5E1375 EPA Tag No.:	Date / Time Sampled: 08/15/07 14:40 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-02 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	149	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW5W0125 EPA Tag No.:	Date / Time Sampled: 08/15/07 15:40 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-03 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	76.2	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW6E1350 EPA Tag No.:	Date / Time Sampled: 08/15/07 16:45 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-04 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	238	mg/L		5.0	1	08/21/2007	dbr	7H21001

Project Name: Richardson Flats - Lower Silver Creek
TDF #: SC-086

Certificate of Analysis

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW6W0125 EPA Tag No.:	Date / Time Sampled: 08/15/07 17:35 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-05 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	425	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW6W0625 EPA Tag No.:	Date / Time Sampled: 08/15/07 18:10 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-06 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	191	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW4E0875 EPA Tag No.:	Date / Time Sampled: 08/16/07 08:55 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-07 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	216	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW4E0375 EPA Tag No.:	Date / Time Sampled: 08/16/07 09:30 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-08 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	906	mg/L		5.0	1	08/21/2007	dbr	7H21001

Project Name: Richardson Flats - Lower Silver Creek
TDF #: SC-086

Certificate of Analysis

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW3E1125 EPA Tag No.:	Date / Time Sampled: 08/16/07 11:05 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-09 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	321	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW3E0125 EPA Tag No.:	Date / Time Sampled: 08/16/07 11:40 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-10 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	426	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW2E0625 EPA Tag No.:	Date / Time Sampled: 08/16/07 12:20 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-11 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	272	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW2E0125 EPA Tag No.:	Date / Time Sampled: 08/16/07 12:50 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-12 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	337	mg/L		5.0	1	08/21/2007	dbr	7H21001

Project Name: Richardson Flats - Lower Silver Creek
TDF #: SC-086

Certificate of Analysis

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW2W0125 EPA Tag No.:	Date / Time Sampled: 08/16/07 13:15 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-13 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	69.3	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW1E0125 EPA Tag No.:	Date / Time Sampled: 08/16/07 14:00 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-14 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	221	mg/L		5.0	1	08/21/2007	dbr	7H21001

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: GW1W0125 EPA Tag No.:	Date / Time Sampled: 08/16/07 14:20 Matrix: Ground Water	Workorder: C708002 Lab Number: C708002-15 A
--	---	--

Method	Parameter	Results	Units	Q	Detection Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Sulfate as SO ₄	222	mg/L		5.0	1	08/21/2007	dbr	7H21001

"J" Qualifier indicates an estimated value

Project Name: Richardson Flats - Lower Silver Creek

Certificate of Analysis

TDF #: SC-086

Classical Chemistry by EPA/ASTM/APHA Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	MDL	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
ESAT Dionex IC									
Batch 7H21001 - No Prep Req			Water						ESAT Dionex IC
Method Blank (7H21001-BLK1)		Dilution Factor: 1							Prepared & Analyzed: 08/21/07
Sulfate as SO ₄	<		mg/L						
Method Blank Spike (7H21001-BS1)		Dilution Factor: 1							Prepared & Analyzed: 08/21/07
Sulfate as SO ₄	26.0		mg/L	25.0		104	80-120		
Duplicate (7H21001-DUP1)		Dilution Factor: 1		Source: C708002-01					Prepared & Analyzed: 08/21/07
Sulfate as SO ₄	207		mg/L	245				17	20
Duplicate (7H21001-DUP2)		Dilution Factor: 1		Source: C708002-11					Prepared & Analyzed: 08/21/07
Sulfate as SO ₄	272		mg/L	272				0	20
Matrix Spike (7H21001-MS1)		Dilution Factor: 1		Source: C708002-01					Prepared & Analyzed: 08/21/07
Sulfate as SO ₄	272		mg/L	25.0	245	108	80-120		
Matrix Spike (7H21001-MS2)		Dilution Factor: 1		Source: C708002-11					Prepared & Analyzed: 08/21/07
Sulfate as SO ₄	252		mg/L	25.0	272	NR	80-120		
Matrix Spike Dup (7H21001-MSD1)		Dilution Factor: 1		Source: C708002-01					Prepared & Analyzed: 08/21/07
Sulfate as SO ₄	268		mg/L	25.0	245	92	80-120	1	20
Matrix Spike Dup (7H21001-MSD2)		Dilution Factor: 1		Source: C708002-11					Prepared & Analyzed: 08/21/07
Sulfate as SO ₄	291		mg/L	25.0	272	76	80-120	14	20

NOTE: %R = % Recovery, %R limits do not apply when sample levels exceed 4x the spike level.

RPD = Relative Percent Difference, %D = % Difference, MDL = Method Detection Limit for QC sample

Project Name: Richardson Flats - Lower Silver Creek

Certificate of Analysis

TDF #: SC-086

ESAT Region 8
INORGANIC ANALYSES DATA SHEET
Initial and Continuing Calibration Blanks

Analytical Method: EPA 300.0Analysis Name: WC - Anions by Ion ChromatographyInstrument: ESAT Dionex ICWork Order: C708002Analytical Sequence: 7080045 **Dissolved**Concentration Units: mg/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		MDL	
		1	2	3	4	7H21001-BLK1	NA		
Sulfate as SO ₄	0.00	0.00	0.00	0.00	0.00	7H21001-BLK1	NA	0.10	
		5	6	7	8				
						0.00	NA		

TechLaw, Inc. - ESAT Region 8											
Initial and Continuing Calibration Verification Results											
ESAT Dionex IC			Method: EPA 300.0			Analysis Name: WC - Anions by Ion Chromatography					
Sequence: 7080045			Work Order: C708002			Units: mg/L					
Dissolved Analyte											
Analyte			Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)					
			True	Found	%R	True	Found	%R	True	Found	%R
Sulfate as SO ₄			65.0	60.2	92.6	1	2		3		
						100	104	104.0	100	95.8	95.8
						4	5		6		
						100	110	110.0			
						7	8		9		

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

Project Name: Richardson Flats - Lower Silver Creek

Certificate of Analysis

TDF #: SC-086

ESAT Region 8

INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: EPA 300.0

Dissolved

Sequence ID#: 7080045

Instrument ID #: ESAT Dionex IC

Water

LSR #: SC-086

Analysis ID	Sample Name	Analysis Date	Analysis Time
7080045-ICV1	Initial Cal Check	08/21/07	08:59
7080045-ICB1	Initial Cal Blank	08/21/07	09:15
7080045-CCV1	Calibration Check	08/21/07	09:32
7080045-CCB1	Calibration Blank	08/21/07	09:49
7H21001-BLK1	Blank	08/21/07	10:06
7H21001-BS1		08/21/07	10:22
C708002-01	GW5E1875	08/21/07	10:39
7H21001-DUP1	Duplicate	08/21/07	10:56
7H21001-MS1	Matrix Spike	08/21/07	11:12
7H21001-MSD1	Matrix Spike Dup	08/21/07	11:29
C708002-02	GW5E1375	08/21/07	11:46
C708002-03	GW5W0125	08/21/07	12:03
C708002-04	GW6E1350	08/21/07	12:19
C708002-05	GW6W0125	08/21/07	12:36
7080045-CCV2	Calibration Check	08/21/07	12:53
7080045-CCB2	Calibration Blank	08/21/07	13:10
C708002-06	GW6W0625	08/21/07	13:26
C708002-07	GW4E0875	08/21/07	13:43
C708002-08	GW4E0375	08/21/07	14:00
C708002-09	GW3E1125	08/21/07	14:17
C708002-10	GW3E0125	08/21/07	14:33
C708002-11	GW2E0625	08/21/07	14:50
7H21001-DUP2	Duplicate	08/21/07	15:07
7H21001-MS2	Matrix Spike	08/21/07	15:24
7H21001-MSD2	Matrix Spike Dup	08/21/07	15:40
C708002-12	GW2E0125	08/21/07	15:57
7080045-CCV3	Calibration Check	08/21/07	16:14
7080045-CCB3	Calibration Blank	08/21/07	16:31
C708002-13	GW2W0125	08/21/07	16:47
C708002-14	GW1E0125	08/21/07	17:04
C708002-15	GW1W0125	08/21/07	17:21
7080045-CCV4	Calibration Check	08/21/07	17:54
7080045-CCB4	Calibration Blank	08/21/07	18:11

Project Name: Richardson Flats - Lower Silver Creek

TDF: SC-086

Certificate of Analysis

ESAT Region 8

ANALYTICAL TRANSACTIONS

Richardson Flats - Lower Silver Creek

Analysis	Analysis Code	Samples	Dups	Spikes	Blanks	Check Samples & Stds	Dilutions \ Reruns	Analytical Sets
Sulfate	WC_Anions	15	2	5	7	5	21	1
Total		15	2	5	7	5	21	1

ANA

ESAT Technical Direction Form

EPA Region 8

Contractor: TechLaw

Updated 05/08/2006

Contract No: EP-W-06-033

I. Task Monitor: SC	II. Task No. 86	III. Site: Richardson Flats
		IV. Date Issued: 8/2/2007

V. Summary (80 chars): Analyze approximately 30 water samples for Sulfate.

VI. Matrix: Water Soils Vegetation Biota

VII. Project Name (80 chars): Silver Creek

VIII. Details:

Richardson Flats

Site#

2007 TR2B 08L 302DD2C 0894BD01

IX. Requested Analytes – Wet Chemistry

- Total Suspended Solids Total Dissolved Solids Dissolved Organic Carbon Alkalinity
 Anions Chloride Sulfate Fluoride Nitrate Nitrite Other (Hardness 2340B)

X. Requested Analytes – Metals

- Dissolved Total Recoverable Total Hardness, Calculated

200.7 Al Ba Be B Ca Co Cr Cu Fe K Mg
 Mn Mo Na SiO₂ Sr Ti V Zn

200.8 Ag As Cd Ni Pb Sb Se Th Tl U

	Description	Due Date
1	Provide final deliverable package to Task Monitor no later than 30 days after delivery of the last set of samples.	9/21/2007
2		
3		
4		
5		
6		
7		
8		
9		
10		

VII. Deliverables:

August 27, 2007

Report to:

Brianna Shanklin
Rocky Mountain Consultants, Inc.
1900 South Sunset Street Suite 1-F
Longmont, CO 80501

Bill to:

Brianna Shanklin
Rocky Mountain Consultants, Inc.
1900 South Sunset Street Suite 1-F
Longmont, CO 80501

Project ID: LOWER SILVER CREEK

ACZ Project ID: L64492

Brianna Shanklin:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 17, 2007. This project has been assigned to ACZ's project number, L64492. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L64492. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 27, 2007. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW2E0125

ACZ Sample ID: **L64492-01**
Date Sampled: 08/16/07 12:50
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	6.78			mg/L	0.02	0.05	08/24/07 6:19	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)	3.0			mg/L	0.1	0.5	08/27/07 13:52	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	3.7	H	*	mg/L	0.1	0.5	08/17/07 15:32	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW3E0125

ACZ Sample ID: **L64492-02**
Date Sampled: 08/16/07 11:40
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	3.41			mg/L	0.02	0.05	08/24/07 6:23	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)	2.25			mg/L	0.05	0.3	08/27/07 13:52	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	1.16	H	*	mg/L	0.05	0.3	08/17/07 15:37	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW2E0625

ACZ Sample ID: **L64492-03**
Date Sampled: 08/16/07 12:20
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	1.68			mg/L	0.02	0.05	08/24/07 6:27	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)	1.17			mg/L	0.05	0.3	08/27/07 13:52	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	0.51	H	*	mg/L	0.05	0.3	08/17/07 15:41	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW4E0375

ACZ Sample ID: **L64492-04**
Date Sampled: 08/16/07 09:30
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	15.80			mg/L	0.02	0.05	08/24/07 6:40	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)		U		mg/L	0.1	0.5	08/27/07 13:52	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	17.6	H	*	mg/L	0.1	0.5	08/17/07 15:45	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW5E1875

ACZ Sample ID: **L64492-05**
Date Sampled: 08/15/07 12:00
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	0.29			mg/L	0.02	0.05	08/24/07 6:44	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)	0.29			mg/L	0.02	0.05	08/27/07 13:52	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D		UH	*	mg/L	0.01	0.05	08/17/07 15:49	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW6E1350

ACZ Sample ID: **L64492-06**
Date Sampled: 08/15/07 16:45
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	0.27			mg/L	0.02	0.05	08/24/07 6:48	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)	0.19			mg/L	0.02	0.05	08/27/07 13:52	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	0.08	H	*	mg/L	0.01	0.05	08/17/07 15:54	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW3E1125

ACZ Sample ID: **L64492-07**
Date Sampled: 08/16/07 11:05
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP		U		mg/L	0.02	0.05	08/24/07 6:52	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)		U		mg/L	0.02	0.05	08/27/07 13:52	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	0.23	H	*	mg/L	0.01	0.05	08/17/07 15:58	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW4E0875

ACZ Sample ID: **L64492-08**
Date Sampled: 08/16/07 08:55
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	1.74			mg/L	0.02	0.05	08/24/07 6:56	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)	1.74			mg/L	0.02	0.05	08/27/07 13:52	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D		UH	*	mg/L	0.01	0.05	08/17/07 16:02	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW6W0125

ACZ Sample ID: **L64492-09**
Date Sampled: 08/15/07 17:35
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	8.74			mg/L	0.02	0.05	08/24/07 7:00	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)	3.3			mg/L	0.1	0.5	08/27/07 13:53	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	5.4	H	*	mg/L	0.1	0.5	08/17/07 16:07	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW5W0125

ACZ Sample ID: **L64492-10**
Date Sampled: 08/15/07 15:40
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	0.48	*		mg/L	0.02	0.05	08/24/07 7:04	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)	0.28			mg/L	0.02	0.1	08/27/07 13:53	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	0.20	H	*	mg/L	0.02	0.1	08/17/07 16:19	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW2W0125

ACZ Sample ID: **L64492-11**
Date Sampled: 08/16/07 13:15
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	0.37		*	mg/L	0.02	0.05	08/24/07 7:17	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)		U		mg/L	0.05	0.3	08/27/07 13:53	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	0.66	H	*	mg/L	0.05	0.3	08/17/07 16:32	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW6W0625

ACZ Sample ID: **L64492-12**
Date Sampled: 08/15/07 18:10
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	7.42	*		mg/L	0.02	0.05	08/24/07 7:29	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)	3.2			mg/L	0.1	0.5	08/27/07 13:53	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	4.2	H	*	mg/L	0.1	0.5	08/17/07 16:37	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW5E1375

ACZ Sample ID: **L64492-13**
Date Sampled: 08/15/07 14:40
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	0.06		*	mg/L	0.02	0.05	08/24/07 7:33	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)		U		mg/L	0.02	0.05	08/27/07 13:53	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	1.21	H	*	mg/L	0.01	0.05	08/17/07 16:41	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW1E0125

ACZ Sample ID: **L64492-14**
Date Sampled: 08/16/07 14:00
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	1.06	*		mg/L	0.02	0.05	08/24/07 7:38	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)	0.86			mg/L	0.02	0.05	08/27/07 13:53	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	0.20	H	*	mg/L	0.01	0.05	08/17/07 16:45	jlf/lcp

Rocky Mountain Consultants, Inc.

Project ID: LOWER SILVER CREEK
Sample ID: GW1W0125

ACZ Sample ID: **L64492-15**
Date Sampled: 08/16/07 14:20
Date Received: 08/17/07
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, dissolved	M200.7 ICP	0.62		*	mg/L	0.02	0.05	08/24/07 7:42	djt
Iron, Ferric	Calculation (Dissolved Fe - Ferrous Fe)		U		mg/L	0.02	0.05	08/27/07 13:53	calc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Iron, Ferrous	SM 3500 Fe-D	1.08	H	*	mg/L	0.01	0.05	08/17/07 16:49	jlf/lcp

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

<i>B</i>	Analyte concentration detected at a value between MDL and PQL.
<i>H</i>	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
<i>U</i>	Analyte was analyzed for but not detected at the indicated MDL

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Rocky Mountain Consultants, Inc.

ACZ Project ID: **L64492**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64492-01	WG230559	Iron, Ferrous	SM 3500 Fe-D SM 3500 Fe-D SM 3500 Fe-D	H3 QD ZR	Sample was received and analyzed past holding time. Reported value is the background-corrected concentration, as described by the method. Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-02	WG230559	Iron, Ferrous	SM 3500 Fe-D SM 3500 Fe-D SM 3500 Fe-D	H3 QD ZR	Sample was received and analyzed past holding time. Reported value is the background-corrected concentration, as described by the method. Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-03	WG230559	Iron, Ferrous	SM 3500 Fe-D SM 3500 Fe-D SM 3500 Fe-D	H3 QD ZR	Sample was received and analyzed past holding time. Reported value is the background-corrected concentration, as described by the method. Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-04	WG230559	Iron, Ferrous	SM 3500 Fe-D SM 3500 Fe-D	H3 ZR	Sample was received and analyzed past holding time. Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-05	WG230559	Iron, Ferrous	SM 3500 Fe-D SM 3500 Fe-D SM 3500 Fe-D	H3 QD ZR	Sample was received and analyzed past holding time. Reported value is the background-corrected concentration, as described by the method. Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-06	WG230559	Iron, Ferrous	SM 3500 Fe-D SM 3500 Fe-D SM 3500 Fe-D	H3 QD ZR	Sample was received and analyzed past holding time. Reported value is the background-corrected concentration, as described by the method. Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-07	WG230559	Iron, Ferrous	SM 3500 Fe-D SM 3500 Fe-D	H3 ZR	Sample was received and analyzed past holding time. Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-08	WG230559	Iron, Ferrous	SM 3500 Fe-D SM 3500 Fe-D SM 3500 Fe-D	H3 QD ZR	Sample was received and analyzed past holding time. Reported value is the background-corrected concentration, as described by the method. Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-09	WG230559	Iron, Ferrous	SM 3500 Fe-D SM 3500 Fe-D	H3 ZR	Sample was received and analyzed past holding time. Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.

Rocky Mountain Consultants, Inc.

ACZ Project ID: L64492

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64492-10	WG230911	Iron, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG230559	Iron, Ferrous	SM 3500 Fe-D	H3	Sample was received and analyzed past holding time.
			SM 3500 Fe-D	QD	Reported value is the background-corrected concentration, as described by the method.
			SM 3500 Fe-D	ZR	Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-11	WG230911	Iron, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG230559	Iron, Ferrous	SM 3500 Fe-D	H3	Sample was received and analyzed past holding time.
			SM 3500 Fe-D	QD	Reported value is the background-corrected concentration, as described by the method.
			SM 3500 Fe-D	ZR	Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-12	WG230911	Iron, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG230559	Iron, Ferrous	SM 3500 Fe-D	H3	Sample was received and analyzed past holding time.
			SM 3500 Fe-D	QD	Reported value is the background-corrected concentration, as described by the method.
			SM 3500 Fe-D	ZR	Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-13	WG230911	Iron, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG230559	Iron, Ferrous	SM 3500 Fe-D	H3	Sample was received and analyzed past holding time.
			SM 3500 Fe-D	QD	Reported value is the background-corrected concentration, as described by the method.
			SM 3500 Fe-D	ZR	Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-14	WG230911	Iron, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG230559	Iron, Ferrous	SM 3500 Fe-D	H3	Sample was received and analyzed past holding time.
			SM 3500 Fe-D	QD	Reported value is the background-corrected concentration, as described by the method.
			SM 3500 Fe-D	ZR	Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.
L64492-15	WG230911	Iron, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG230559	Iron, Ferrous	SM 3500 Fe-D	H3	Sample was received and analyzed past holding time.
			SM 3500 Fe-D	QD	Reported value is the background-corrected concentration, as described by the method.
			SM 3500 Fe-D	ZR	Fe 2+ data is estimated because samples should be analyzed within 1 hour from sampling. After 1 hour the ferrous-ferric ratio changes in acidic solutions or with exposure to air.

Rocky Mountain Consultants, Inc.

ACZ Project ID: **L64492**

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Iron, Ferrous

SM 3500 Fe-D

Rocky Mountain Consultants, Inc.
 LOWER SILVER CREEK

ACZ Project ID: L64492
 Date Received: 8/17/2007
 Received By:
 Date Printed: 8/17/2007

Receipt Verification

- 1) Does this project require special handling procedures such as CLP protocol?
- 2) Are the custody seals on the cooler intact?
- 3) Are the custody seals on the sample containers intact?
- 4) Is there a Chain of Custody or other directive shipping papers present?
- 5) Is the Chain of Custody complete?
- 6) Is the Chain of Custody in agreement with the samples received?
- 7) Is there enough sample for all requested analyses?
- 8) Are all samples within holding times for requested analyses?
- 9) Were all sample containers received intact?
- 10) Are the temperature blanks present?
- 11) Are the trip blanks (VOA and/or Cyanide) present?
- 12) Are samples requiring no headspace, headspace free?
- 13) Do the samples that require a Foreign Soils Permit have one?

YES	NO	NA
		X
X		
		X
X		
X		
X		
X		
X		
		X
		X
		X
		X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA4209	5.1	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Added 1ml nitric acid to all green sub-samples to adjust the pH to the appropriate range.

Rocky Mountain Consultants, Inc.
LOWER SILVER CREEK

ACZ Project ID: L64492
Date Received: 8/17/2007
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T >12	N/A	RAD	ID
L64492-01	GW2E0125		Y									<input type="checkbox"/>
L64492-02	GW3E0125		Y									<input type="checkbox"/>
L64492-03	GW2E0625		Y									<input type="checkbox"/>
L64492-04	GW4E0375		Y									<input type="checkbox"/>
L64492-05	GW5E1875		Y									<input type="checkbox"/>
L64492-06	GW6E1350		Y									<input type="checkbox"/>
L64492-07	GW3E1125		Y									<input type="checkbox"/>
L64492-08	GW4E0875		Y									<input type="checkbox"/>
L64492-09	GW6W0125		Y									<input type="checkbox"/>
L64492-10	GW5W0125		Y									<input type="checkbox"/>
L64492-11	GW2W0125		Y									<input type="checkbox"/>
L64492-12	GW6W0625		Y									<input type="checkbox"/>
L64492-13	GW5E1375		Y									<input type="checkbox"/>
L64492-14	GW1E0125		Y									<input type="checkbox"/>
L64492-15	GW1W0125		Y									<input type="checkbox"/>

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ**Laboratories, Inc.**

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L6049Q

CHAIN of CUSTODY

Report to:

Name: <u>Brianna Shanklin</u>	Address: <u>1900 S. Sunset St. Ste 1-F</u>
Company: <u>TetraTech</u>	<u>Longmont, CO 80501</u>
E-mail: <u>Brianna.Shanklin@tetratech.com</u>	Telephone: <u>303 772 5282</u>

Copy of Report to:

Name:	E-mail:
Company:	Telephone:

Invoice to:

Name:	Address: <u>same as above</u>
Company: <u>Tetra Tech</u>	
E-mail: <u>same as above</u>	Telephone: <u>same as above</u>

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO"

is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION**ANALYSES REQUESTED (attach list or use quote number)**Quote #: BOTTLE ORDER - B017705Project/PO #: LOWER SILVER CREEKReporting state for compliance testing: -Sampler's Name: Brianna ShanklinAre any samples NRC licensable material? NO

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ferrous Iron	Total Iron
GW&E0125	8/16/07: 12:50	GW	2	✓	✓
GW3E0125	8/16/07: 11:40	GW	2	✓	✓
GW2E0625	8/16/07: 12:20	GW	2	✓	✓
GW4 E0375	8/16/07: 09:30	GW	2	✓	✓
GW5 E1875	8/15/07: 12:00	GW	2	✓	✓
GW6 E1350	8/15/07: 16:45	GW	2	✓	✓
GW3E 1125	8/16/07: 11:05	GW	2	✓	✓
GW4 E0875	8/16/07: 08:55	GW	2	✓	✓
GW6 W0125	8/15/07: 17:35	GW	2	✓	✓
GW5 W0125	8/15/07: 15:40	GW	2	✓	✓

Matrix SW (Surface Water) GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other**REMARKS/ SAMPLE DISCLOSURES**

PAGE
of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:

DATE:TIME

RECEIVED BY:

DATE:TIME

Brianna Shanklin8/16/07 3:50PMES8/17/07 10:20

September 13, 2007

Report to:

Brianna Shanklin
Rocky Mountain Consultants, Inc.
1900 South Sunset Street Suite 1-F
Longmont, CO 80501

Bill to:

Brianna Shanklin
Rocky Mountain Consultants, Inc.
1900 South Sunset Street Suite 1-F
Longmont, CO 80501

Project ID:

ACZ Project ID: L64511

Brianna Shanklin:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 17, 2007. This project has been assigned to ACZ's project number, L64511. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L64511. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 13, 2007. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



Rocky Mountain Consultants, Inc.

Project ID:

Sample ID: T6FE0625-0-5-081307

ACZ Sample ID: **L64511-01**

Date Sampled: 08/13/07 00:00

Date Received: 08/17/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	2	B		t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	33			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	31			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	3.3	*		%	0.1	0.5	09/04/07 10:42	srs/bjl
Sulfur, total	ASTM D-4239-85C, LECO Furnace	0.05	B	*	%	0.01	0.1	09/05/07 9:40	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/29/07 5:31	lwt
Crush and Pulverize	USDA No. 1, 1972							09/04/07 9:00	lwt

Rocky Mountain Consultants, Inc.

Project ID:

Sample ID: T5FE0375-0-5-081307

ACZ Sample ID: **L64511-02**

Date Sampled: 08/13/07 15:15

Date Received: 08/17/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	378			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	182			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	-196			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	18.2	*		%	0.1	0.5	09/04/07 11:25	srs/bjl
Sulfur, total	ASTM D-4239-85C, LECO Furnace	12.10	*		%	0.01	0.1	09/05/07 9:50	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/29/07 5:58	lwt
Crush and Pulverize	USDA No. 1, 1972							09/04/07 9:06	lwt

Rocky Mountain Consultants, Inc.

Project ID:

Sample ID: T5FW0175-09-081307

ACZ Sample ID: **L64511-03**

Date Sampled: 08/13/07 00:00

Date Received: 08/17/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	39			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	12			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	-27			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	1.2	*		%	0.1	0.5	09/04/07 11:46	srs/bjl
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1.26	*		%	0.01	0.1	09/05/07 9:55	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/29/07 6:25	lwt
Crush and Pulverize	USDA No. 1, 1972							09/04/07 9:13	lwt

Rocky Mountain Consultants, Inc.

Project ID:

Sample ID: T6FE0375-0-5-081307

ACZ Sample ID: **L64511-04**

Date Sampled: 08/13/07 00:00

Date Received: 08/17/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	4	B		t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	109			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	105			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	10.9	*		%	0.1	0.5	09/04/07 12:07	srs/bjl
Sulfur, total	ASTM D-4239-85C, LECO Furnace	0.13	*		%	0.01	0.1	09/05/07 10:00	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/29/07 6:52	lwt
Crush and Pulverize	USDA No. 1, 1972							09/04/07 9:20	lwt

Rocky Mountain Consultants, Inc.

Project ID:

Sample ID: T1FW0125-07-081507

ACZ Sample ID: **L64511-05**

Date Sampled: 08/15/07 00:00

Date Received: 08/17/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	8			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	25			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	18			t CaCO ₃ /Kt	1	5	09/12/07 16:19	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	2.5	*		%	0.1	0.5	09/04/07 12:28	srs/bjl
Sulfur, total	ASTM D-4239-85C, LECO Furnace	0.24	*		%	0.01	0.1	09/05/07 10:05	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/29/07 7:19	lwt
Crush and Pulverize	USDA No. 1, 1972							09/04/07 9:26	lwt

Rocky Mountain Consultants, Inc.

Project ID:

Sample ID: T3FE0125-07-081407

ACZ Sample ID: **L64511-06**

Date Sampled: 08/14/07 00:00

Date Received: 08/17/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	4	B		t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	8			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	4			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	0.8	*		%	0.1	0.5	09/04/07 12:50	srs/bjl
Sulfur, total	ASTM D-4239-85C, LECO Furnace	0.13	*		%	0.01	0.1	09/05/07 10:10	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/29/07 7:46	lwt
Crush and Pulverize	USDA No. 1, 1972							09/04/07 9:33	lwt

Rocky Mountain Consultants, Inc.

Project ID:

Sample ID: T3FW0375-0-5-081507

ACZ Sample ID: **L64511-07**

Date Sampled: 08/15/07 00:00

Date Received: 08/17/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	38			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	140			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	102			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	14.0	*		%	0.1	0.5	09/04/07 13:11	srs/bjl
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1.22	*		%	0.01	0.1	09/05/07 10:15	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/29/07 8:12	lwt
Crush and Pulverize	USDA No. 1, 1972							09/04/07 9:40	lwt

Rocky Mountain Consultants, Inc.

Project ID:

Sample ID: T2FW0125-12-081507

ACZ Sample ID: **L64511-08**

Date Sampled: 08/15/07 00:00

Date Received: 08/17/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	0			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	15			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	15			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	1.5	*		%	0.1	0.5	09/04/07 13:32	srs/bjl
Sulfur, total	ASTM D-4239-85C, LECO Furnace		U	*	%	0.01	0.1	09/05/07 10:20	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/29/07 8:39	lwt
Crush and Pulverize	USDA No. 1, 1972							09/04/07 9:46	lwt

Rocky Mountain Consultants, Inc.

Project ID:

Sample ID: T4FE0375-10-081407

ACZ Sample ID: **L64511-09**

Date Sampled: 08/14/07 00:00

Date Received: 08/17/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	0			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	14			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	14			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	1.4	*		%	0.1	0.5	09/04/07 13:53	srs/bjl
Sulfur, total	ASTM D-4239-85C, LECO Furnace	0.01	B	*	%	0.01	0.1	09/05/07 10:25	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/29/07 9:06	lwt
Crush and Pulverize	USDA No. 1, 1972							09/04/07 9:53	lwt

Rocky Mountain Consultants, Inc.

Project ID:

Sample ID: T2FW0375-0-5-081507

ACZ Sample ID: **L64511-10**

Date Sampled: 08/15/07 00:00

Date Received: 08/17/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	2	B		t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	22			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	20			t CaCO ₃ /Kt	1	5	09/12/07 16:20	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	2.2	*		%	0.1	0.5	09/04/07 14:15	srs/bjl
Sulfur, total	ASTM D-4239-85C, LECO Furnace	0.06	B	*	%	0.01	0.1	09/05/07 10:30	lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							08/29/07 9:33	lwt
Crush and Pulverize	USDA No. 1, 1972							09/04/07 10:00	lwt

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

<i>B</i>	Analyte concentration detected at a value between MDL and PQL.
<i>H</i>	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
<i>U</i>	Analyte was analyzed for but not detected at the indicated MDL

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

Rocky Mountain Consultants, Inc.ACZ Project ID: **L64511**

Project ID:

Neutralization Potential as CaCO₃

M600/2-78-054 3.2.3

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG231577													
WG231577LCSS	LCSS	09/04/07 10:21	PCN20880	100		109.45	%						
L64511-01DUP	DUP	09/04/07 11:03			3.3	3.02	%				8.9	20	

Sulfur, total

ASTM D-4239-85C, LECO Furnace

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG231639													
WG231639PBS	PBS	09/05/07 9:30				U	%		-0.03	0.03			
WG231639LCSS	LCSS	09/05/07 9:35	PCN26261	4.24		4.6	%		80	120			
L64511-01DUP	DUP	09/05/07 9:45			.05	.06	%				18.2	20	RA

Rocky Mountain Consultants, Inc.

ACZ Project ID: L64511

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L64511-01	WG231639	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L64511-02	WG231639	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L64511-03	WG231639	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L64511-04	WG231639	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L64511-05	WG231639	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L64511-06	WG231639	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L64511-07	WG231639	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L64511-08	WG231639	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L64511-09	WG231639	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L64511-10	WG231639	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Rocky Mountain Consultants, Inc.

ACZ Project ID: **L64511**

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3
Sulfur, total	ASTM D-4239-85C, LECO Furnace

Rocky Mountain Consultants, Inc.

ACZ Project ID: L64511
Date Received: 8/17/2007
Received By:
Date Printed: 8/18/2007

Receipt Verification

- 1) Does this project require special handling procedures such as CLP protocol?
- 2) Are the custody seals on the cooler intact?
- 3) Are the custody seals on the sample containers intact?
- 4) Is there a Chain of Custody or other directive shipping papers present?
- 5) Is the Chain of Custody complete?
- 6) Is the Chain of Custody in agreement with the samples received?
- 7) Is there enough sample for all requested analyses?
- 8) Are all samples within holding times for requested analyses?
- 9) Were all sample containers received intact?
- 10) Are the temperature blanks present?
- 11) Are the trip blanks (VOA and/or Cyanide) present?
- 12) Are samples requiring no headspace, headspace free?
- 13) Do the samples that require a Foreign Soils Permit have one?

YES	NO	NA
		X
		X
		X
X		
X		
X		
X		
X		
X		
		X
		X
		X
		X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
na4210	25.2	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Rocky Mountain Consultants, Inc.

ACZ Project ID: L64511
Date Received: 8/17/2007
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T >12	N/A	RAD	ID
L64511-01	T6FE0625-0-5-081307									X		<input type="checkbox"/>
L64511-02	T5FE0375-0-5-081307									X		<input type="checkbox"/>
L64511-03	T5FW0175-09-081307									X		<input type="checkbox"/>
L64511-04	T6FE0375-0-5-081307									X		<input type="checkbox"/>
L64511-05	T1FW0125-07-081507									X		<input type="checkbox"/>
L64511-06	T3FE0125-07-081407									X		<input type="checkbox"/>
L64511-07	T3FW0375-0-5-081507									X		<input type="checkbox"/>
L64511-08	T2FW0125-12-081507									X		<input type="checkbox"/>
L64511-09	T4FE0375-10-081407									X		<input type="checkbox"/>
L64511-10	T2FW0375-0-5-081507									X		<input type="checkbox"/>

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 μ R/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Report to:

Name: Brianna Shanklin
Company: TetraTech
E-mail: Brianna.Shanklin@tetrtech.com

Address: 1900 S. Sunset St Ste 1-F
Longmont, CO 80501
Telephone: 303 772 5282

Copy of Report to:

Name:
Company:

E-mail:
Telephone:

Invoice to:

Name: Brianna Shanklin
Company: TetraTech
E-mail: Brianna.Shanklin@tetrtech.com

Address: 1900 S. Sunset St. Ste. 1-F
Longmont, CO 80501
Telephone: 303 772 5282

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES
NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #:		# of Containers	TOTAL SULFUR	NEUTRALIZATION POTENTIAL	ACID GEN. POT.	ACID NEUTRAL. POT.	ACID-BASE POT.	
Project/PO#:								
Reporting state for compliance testing:								
Sampler's Name: Brianna Shanklin								
Are any samples NRC licensable material?								
T6FE0625-05-081307	8-13-07	SO	1	X	X	X	X	
T5FE0375-05-081307	8-13-07 : 15:15	SO	1	X	X	X	X	
T5FW0175-09-081307	8-13-07	SO	1	X	X	X	X	
T6FE0375-05-081307	8-13-07	SO	1	X	X	X	X	
T1FW0125-07-081507	8-15-07	SO	1	X	X	X	X	
T3FE0125-07-081407	8-14-07	SO	1	X	X	X	X	
T3FW0375-05-081507	8-15-07	SO	1	X	X	X	X	
TZFW0125-12-081507	8-15-07	SO	1	X	X	X	X	
T4FE0375-10-081407	8-14-07	SL	1	X	X	X	X	
T2FW0375-05-081507	8-15-07	SO	1	X	X	X	X	

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Brianna Shanklin <i>Ch. #7</i>	8/16/07	<i>Chris H</i> FEDEX <i>KU</i>	8-17-07 10:20



FAX TRANSMISSION

TO: BRIANNA SHANKLIN

COMPANY: TETRA TECH

RE: RESULTS

FAX NO: 303-772-7039

**FROM: REBECCA LOPEZ, COLORADO ANALYTICAL
PHONE 303-659-2313 FAX: 303-659-2315**



**Colorado Analytical
Laboratories, Inc.**

Soil Nutrient Laboratory Report

Lab No.: 07081704-01
Date Rec: 8/17/07
Reported: 8/28/07

Report To: Brianna Shanklin

Company: Tetra Tech RMC
1900 S. Sunset St. - Ste I-F
Longmont CO 80501

Sample ID: T4FE0375-10-081407

Project:

Laboratory Results:

Sample Result	Low	Ave	High
---------------	-----	-----	------

Field Texture (EST)

pH (units)	7.3	*****
Salts (MMHOS/CM)	0.8	*****
CEC Est. (MEQ/100G)	20.1	*****
Lime (Qual.)	Medium	*****
Organic Matter (%)	1.9	*****
Organic N (lbs/acre)	58.3	*****
Sodium (meq/100g Soil)	0.35	*****

Available Nutrients (ppm)

Nitrate Nitrogen	< 0.1	
Phosphorus	3.7	***
Potassium	345.2	*****
Calcium	2994.6	*****
Magnesium	735.9	*****
Sulfur	6.4	****
Boron	1.0	*****
Zinc	1.0	*****
Iron	11.2	*****
Manganese	1.0	*****
Copper	1.5	*****

Note: Average Values are for Colorado Soils

Fertilizer Recommendations

General Landscape

Nitrogen: 130 lbs/Acre
Phosphorus - P2O5: 80 lbs/Acre
Potassium - K2O: 0 lbs/Acre
Sulfur SO4-S: 50 lbs/Acre
Lime: 0 lbs/Acre

*To convert recommendations to lbs/1000 sq. ft. divide by 40.

Comments

Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.

240 South Main Street / Brighton, CO 80601-0507 / 303-659-2313

Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507 / Fax: 303-659-2315



**Colorado Analytical
Laboratories, Inc.**

Soil Nutrient Laboratory Report

Lab No.: 07081704-02
Date Rec: 8/17/07
Reported: 8/28/07

Report To: Brianna Shanklin

Company: Tetra Tech RMC
 1900 S. Sunset St. - Ste I-F
 Longmont CO 80501

Sample ID: T1FW0125-0.5-081507

Project:

Laboratory Results:

Sample Result	Low	Ave	High
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Field Texture (EST)	Loam		
pH (units)	6.9	*****	
Salts (MMHOS/CM)	5.6	*****	
CEC Est. (MEQ/100G)	34.5	*****	
Lime (Qual.)	Low		
Organic Matter (%)	12.9	*****	
Organic N (lbs/acre)	386.1	*****	
Sodium (meq/100g Soil)	1.70	*****	

Available Nutrients (ppm)

Nitrate Nitrogen	< 0.1		
Phosphorus	19.7	*****	
Potassium	129.8	*****	
Calcium	4263.3	*****	
Magnesium	578.3	*****	
Sulfur	355.5	*****	
Boron	2.3	*****	
Zinc	117.2	*****	
Iron	6.6	*****	
Manganese	2.7	*****	
Copper	119.6	*****	

Note: Average Values are for Colorado Soils

Fertilizer Recommendations

General Landscape

Nitrogen: 130 lbs/Acre
 Phosphorus - P2O5: 60 lbs/Acre
 Potassium - K2O: 0 lbs/Acre
 Sulfur SO4-S: 0 lbs/Acre
 Lime: 0 lbs/Acre

*To convert recommendations to lbs/1000 sq. ft. divide by 40.

Comments

Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.

Yield Reduction Likely Due To High Salts.



Soil Nutrient Laboratory Report

Lab No.: 07081704-03
 Date Rec: 8/17/07
 Reported: 8/28/07

Report To: Brianna Shanklin

Company: Tetra Tech RMC
 1900 S. Sunset St. - Ste I-F
 Longmont CO 80501

Sample ID: T3FW0375-0.5-081507

Project:

Laboratory Results:

Sample Result	Low	Ave	High
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Field Texture (EST)

pH (units)	7.4	*****
Salts (MMHOS/CM)	0.4	****
CEC Est. (MEQ/100G)	9.4	*****
Lime (Qual.)	Medium	*****
Organic Matter (%)	2.1	*****
Organic N (lbs/acre)	61.6	*****
Sodium (meq/100g Soil)	0.35	*****

Available Nutrients (ppm)

Nitrate Nitrogen	< 0.1	*****
Phosphorus	23.7	*****
Potassium	33.0	****
Calcium	1007.2	*****
Magnesium	104.1	*****
Sulfur	34.2	*****
Boron	0.4	*
Zinc	54.7	*****
Iron	15.0	*****
Manganese	1.6	*****
Copper	94.6	*****

Note: Average Values are for Colorado Soils

Fertilizer Recommendations

General Landscape

Nitrogen: 130 lbs/Acre
 Phosphorus - P2O5: 40 lbs/Acre
 Potassium - K2O: 15 lbs/Acre
 Sulfur SO4-S: 5 lbs/Acre
 Lime: 0 lbs/Acre

*To convert recommendations to lbs/1000 sq. ft. divide by 40.

Comments

Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.



Soil Nutrient Laboratory Report

Lab No.: 07081704-04 Date Rec: 8/17/07 Reported: 8/28/07	Report To: Brianna Shanklin	Company: Tetra Tech RMC 1900 S. Sunset St. - Ste I-F Longmont CO 80501
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Sample ID: T3FE0125-07-081407

Project:

Laboratory Results:	Sample Result	Low	Ave	High
Field Texture (EST)	Sandy Loam			
pH (units)	7.8	*****		
Salts (MMHOS/CM)	1.1	*****		
CEC Est. (MEQ/100G)	6.6	*****		
Lime (Qual.)	Medium	*****		
Organic Matter (%)	0.7	*****		
Organic N (lbs/acre)	20.4	*****		
Sodium (meq/100g Soil)	0.38	*****		
<u>Available Nutrients (ppm)</u>				
Nitrate Nitrogen	< 0.1			
Phosphorus	3.4	***		
Potassium	62.6	*****		
Calcium	1464.4	*****		
Magnesium	264.4	*****		
Sulfur	85.6	*****		
Boron	0.3			
Zinc	5.1	*****		
Iron	30.5	*****		
Manganese	2.3	*****		
Copper	3.5	*****		

Note: Average Values are for Colorado Soils

Fertilizer Recommendations
<u>General Landscape</u>
Nitrogen: 130 lbs/Acre
Phosphorus - P2O5: 80 lbs/Acre
Potassium - K2O: 0 lbs/Acre
Sulfur SO4-S: 0 lbs/Acre
Lime: 0 lbs/Acre
*To convert recommendations to lbs/1000 sq. ft. divide by 40.
Comments Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.
3 to 4 Cubic Yards/ 1000 sq. ft. of Low Salt Compost May Be Beneficial.

240 South Main Street / Brighton, CO 80601-0507 / 303-659-2313
 Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507 / Fax: 303-659-2315



**Colorado Analytical
Laboratories, Inc.**

Soil Nutrient Laboratory Report

Lab No.: 07081704-05 Date Rec: 8/17/07 Reported: 8/28/07	Report To: Brianna Shanklin	Company: Tetra Tech RMC 1900 S. Sunset St. - Ste I-F Longmont CO 80501
--	-----------------------------	--

Sample ID: T2FW0375-0.5-081507

Project:

Laboratory Results:	Sample Result	Low	Ave	High
Field Texture (EST)	Clay Loam			
pH (units)	6.6	*****		
Salts (MMHOES/CM)	1.5	*****		
CEC Est. (MEQ/100G)	38.4	*****		
Lime (Qual.)	Low			
Organic Matter (%)	11.1	*****		
Organic N (lbs/acre)	332.7	*****		
Sodium (meq/100g Soil)	0.95	*****		
<u>Available Nutrients (ppm)</u>				
Nitrate Nitrogen	3.6	***		
Phosphorus	28.3	*****		
Potassium	205.4	*****		
Calcium	4280.2	*****		
Magnesium	790.2	*****		
Sulfur	40.9	*****		
Boron	0.9	*****		
Zinc	96.1	*****		
Iron	176.4	*****		
Manganese	5.9	*****		
Copper	18.0	*****		

Note: Average Values are for Colorado Soils

Fertilizer Recommendations
<u>General Landscape</u>
Nitrogen: 130 lbs/Acre
Phosphorus - P2O5: 40 lbs/Acre
Potassium - K2O: 0 lbs/Acre
Sulfur SO4-S: 0 lbs/Acre
Lime: 0 lbs/Acre
*To convert recommendations to lbs/1000 sq. ft. divide by 40.
Comments Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.

240 South Main Street / Brighton, CO 80601-0507 / 303-659-2313
Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507 / Fax: 303-659-2315



Soil Nutrient Laboratory Report

Lab No.: 07081704-06 Date Rec: 8/17/07 Reported: 8/28/07	Report To: Brianna Shanklin	Company: Tetra Tech RMC 1900 S. Sunset St. - Ste I-F Longmont CO 80501
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Sample ID: T1FW0125-07-081507

Project:

Laboratory Results:	Sample Result	Low	Ave	High
Field Texture (EST)	Sandy Clay Loam			
pH (units)	7.7	*****		
Salts (MMHOS/CM)	2.0	*****		
CEC Est. (MEQ/100G)	14.7	*****		
Lime (Qual.)	Medium	*****		
Organic Matter (%)	1.3	*****		
Organic N (lbs/acre)	38.4	*****		
Sodium (meq/100g Soil)	1.43	*****		
<u>Available Nutrients (ppm)</u>				
Nitrate Nitrogen	< 0.1			
Phosphorus	15.6	*****		
Potassium	83.1	*****		
Calcium	2206.9	*****		
Magnesium	411.2	*****		
Sulfur	41.4	*****		
Boron	0.4			
Zinc	51.9	*****		
Iron	34.0	*****		
Manganese	70.3	*****		
Copper	17.8	*****		

Note: Average Values are for Colorado Soils

Fertilizer Recommendations

General Landscape

Nitrogen: 130 lbs/Acre
 Phosphorus - P2O5: 60 lbs/Acre
 Potassium - K2O: 0 lbs/Acre
 Sulfur SO4-S: 0 lbs/Acre
 Lime: 0 lbs/Acre

*To convert recommendations to lbs/1000 sq. ft. divide by 40.

Comments

Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.

3 to 4 Cubic Yards/ 1000 sq. ft. of Low Salt Compost May Be Beneficial.



Soil Nutrient Laboratory Report

Lab No.: 07081704-07 Date Rec: 8/17/07 Reported: 8/28/07	Report To: Brianna Shanklin	Company: Tetra Tech RMC 1900 S. Sunset St. - Ste I-F Longmont CO 80501
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Sample ID: T2FW0125-12-081507

Project:

Laboratory Results:	Sample Result	Low	Ave	High
Field Texture (EST)	Sandy Loam	*****		
pH (units)	7.8	*****		
Salts (MMHOS/CM)	0.6	*****		
CEC Est. (MEQ/100G)	8.1	*****		
Lime (Qual.)	Medium	*****		
Organic Matter (%)	1.4	*****		
Organic N (lbs/acre)	42.1	*****		
Sodium (meq/100g Soil)	0.34	*****		
<u>Available Nutrients (ppm)</u>				
Nitrate Nitrogen	< 0.1	****		
Phosphorus	5.8	****		
Potassium	194.0	*****		
Calcium	2491.0	*****		
Magnesium	619.3	*****		
Sulfur	14.2	*****		
Boron	0.2	*****		
Zinc	2.7	*****		
Iron	13.2	*****		
Manganese	1.4	*****		
Copper	1.7	*****		

Note: Average Values are for Colorado Soils

Fertilizer Recommendations	
<u>General Landscape</u>	
Nitrogen:	130 lbs/Acre
Phosphorus - P2O5:	80 lbs/Acre
Potassium - K2O:	0 lbs/Acre
Sulfur SO4-S:	40 lbs/Acre
Lime:	0 lbs/Acre
*To convert recommendations to lbs/1000 sq. ft. divide by 40.	
<u>Comments</u>	Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.
3 to 4 Cubic Yards/ 1000 sq. ft. of Low Salt Compost May Be Beneficial.	

240 South Main Street / Brighton, CO 80601-0507 / 303-659-2313
 Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507 / Fax: 303-659-2315



**Colorado Analytical
Laboratories, Inc.**

Soil Nutrient Laboratory Report

Lab No.: 07081704-08 Date Rec: 8/17/07 Reported: 8/28/07	Report To: Brianna Shanklin	Company: Tetra Tech RMC 1900 S. Sunset St. - Ste I-F Longmont CO 80501
--	-----------------------------	--

Sample ID: T5FW0175-09-081307

Project:

Laboratory Results:	Sample Result	Low	Ave	High
Field Texture (EST)	Silt Loam			
pH (units)	8.1	*****		
Salts (MMHOS/CM)	1.2	*****		
CEC Est. (MEQ/100G)	11.0	*****		
Lime (Qual.)	Medium	*****		
Organic Matter (%)	1.1	*****		
Organic N (lbs/acre)	32.1	*****		
Sodium (meq/100g Soil)	0.21	***		
<u>Available Nutrients (ppm)</u>				
Nitrate Nitrogen	< 0.1			
Phosphorus	6.1	****		
Potassium	156.9	*****		
Calcium	2427.9	*****		
Magnesium	552.9	*****		
Sulfur	44.5	*****		
Boron	0.3			
Zinc	5.7	*****		
Iron	22.9	*****		
Manganese	3.3	*****		
Copper	3.3	*****		

Note: Average Values are for Colorado Soils

Fertilizer Recommendations	
<u>General Landscape</u>	
Nitrogen:	130 lbs/Acre
Phosphorus - P2O5:	80 lbs/Acre
Potassium - K2O:	0 lbs/Acre
Sulfur SO4-S:	0 lbs/Acre
Lime:	0 lbs/Acre
*To convert recommendations to lbs/1000 sq. ft. divide by 40.	
<u>Comments</u>	Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.
3 to 4 Cubic Yards/ 1000 sq. ft. of Low Salt Compost May Be Beneficial.	

240 South Main Street / Brighton, CO 80601-0507 / 303-659-2313
Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507 / Fax: 303-659-2315



**Colorado Analytical
Laboratories, Inc.**

Soil Nutrient Laboratory Report

Lab No.: 07081704-09 Date Rec: 8/17/07 Reported: 8/28/07	Report To: Brianna Shanklin	Company: Tetra Tech RMC 1900 S. Sunset St. - Ste I-F Longmont CO 80501
--	-----------------------------	--

Sample ID: T6FE0625-0.5-081307

Project:

Laboratory Results:	Sample Result	Low	Ave	High
Field Texture (EST)	Silt Loam			
pH (units)	7.5	*****		
Salts (MMHOS/CM)	1.1	*****		
CEC Est. (MEQ/100G)	18.4	*****		
Lime (Qual.)	Medium	*****		
Organic Matter (%)	4.8	*****	*****	*****
Organic N (lbs/acre)	143.7	*****	*****	*****
Sodium (meq/100g Soil)	0.22	***		
<u>Available Nutrients (ppm)</u>				
Nitrate Nitrogen	19.2	*****		
Phosphorus	29.8	*****		
Potassium	269.4	*****	*****	*****
Calcium	4195.0	*****	*****	*****
Magnesium	474.9	*****	*****	*****
Sulfur	22.4	*****		
Boron	0.9	*****		
Zinc	30.7	*****	*****	*****
Iron	30.5	*****	*****	*****
Manganese	7.2	*****	*****	*****
Copper	4.5	*****	*****	*****

Note: Average Values are for Colorado Soils

Fertilizer Recommendations
<u>General Landscape</u>
Nitrogen: 100 lbs/Acre
Phosphorus - P2O5: 40 lbs/Acre
Potassium - K2O: 0 lbs/Acre
Sulfur SO4-S: 20 lbs/Acre
Lime: 0 lbs/Acre
*To convert recommendations to lbs/1000 sq. ft. divide by 40.
Comments Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.

240 South Main Street / Brighton, CO 80601-0507 / 303-659-2313
Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507 / Fax: 303-659-2315



**Colorado Analytical
Laboratories, Inc.**

Soil Nutrient Laboratory Report

Lab No.: 07081704-10
Date Rec: 8/17/07
Reported: 8/28/07

Report To: Brianna Shanklin

Company: Tetra Tech RMC
1900 S. Sunset St. - Ste I-F
Longmont CO 80501

Sample ID: T5FE0875-0.5-081307

Project:

Laboratory Results:

Sample Result	Low	Ave	High
---------------	-----	-----	------

Field Texture (EST)	Clay Loam	*****
pH (units)	7.4	*****
Salts (MMHOS/CM)	0.8	*****
CEC Est. (MEQ/100G)	23.4	*****
Lime (Qual.)	Medium	*****
Organic Matter (%)	3.6	*****
Organic N (lbs/acre)	106.8	*****
Sodium (meq/100g Soil)	0.20	***

Available Nutrients (ppm)

Nitrate Nitrogen	< 0.1	*****
Phosphorus	17.6	*****
Potassium	67.0	*****
Calcium	2406.3	*****
Magnesium	111.8	*****
Sulfur	144.6	*****
Boron	0.7	***
Zinc	58.5	*****
Iron	7.9	*****
Manganese	2.6	*****
Copper	164.3	*****

Note: Average Values are for Colorado Soils

Fertilizer Recommendations

General Landscape

Nitrogen: 130 lbs/Acre
Phosphorus - P2O5: 60 lbs/Acre
Potassium - K2O: 0 lbs/Acre
Sulfur SO4-S: 0 lbs/Acre
Lime: 0 lbs/Acre

*To convert recommendations to lbs/1000 sq. ft. divide by 40.

Comments

Split Nitrogen Recommendations 2 to 3 Times Throughout the Growing Season.



Colorado Analytical
Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Company Name: Tetra Tech		Contact Person: Brianna Shanklin	Colorado Analytical Laboratories, Inc. P.O. Drawer 507 240 South Main Street Brighton, Colorado 80601 303-659-2313 FAX: 303-659-2315	LABORATORY USE ONLY
Address: 1900 S. Sunset St. Ste 1-F City/ST/ZIP: Longmont, CO 80501		Project ID/Description: 19-3924.DOB.DD	NO. 5708 1704	
Telephone: 303 772 5582 FAX: 303 772 7037		Sampled by: Brianna Shanklin, Sam Wilke	LGN _____	
P.O. NO:		LOC _____		
Sample Matrix (Circle One): DRINKING WATER GROUND SURFACE SOIL SLUDGE WATER WATER WATER		QC _____		
OTHER (Specify):		DISP _____		
Date Time Client Sample ID		DUE _____		
8-14-07		X		
8-15-07	TIFW0125-0.5-081507	X		
8-15-07	T3FW0375-0.5-081507	X		
8-14-07	T3FE0125-07-081407	X		
8-15-07	TZFW0375-0.5-081507	X		
8-15-07	TIFW0125-07-081507	X		
8-15-07	TZFW0125-12-081507	X		
8-13-07	T5FW0175-09-081807	X		
8-12-07	TGFE0625-0.5-081307	X		
8-13-07	T5FE0875-0.5-081307	X		
Comments:		Delivered By:		
Relinquished By: Brianna Shanklin	Date/Time _____ <i>cl</i>	Received By: <i>cl</i>	Date/Time _____ <i>cl</i>	
Relinquished By: <i>cl</i>	Date/Time _____ <i>cl</i>	Received By: <i>cl</i>	Date/Time _____ <i>cl</i>	

240 S. Main St. • Brighton, CO 80601 (303) 659-2313

Mailing Address: P.O. Drawer 507 • Brighton, CO 80601

December 10, 2007

Report to:

Daryl Longwell
McCulley, Frick and Gilman, Inc.
4900 Pearl East Circle Suite 300W
Boulder, CO 80301

cc: Brianna Shanklin

Bill to:

Accounts Payable
McCulley, Frick and Gilman, Inc.
4900 Pearl East Circle Suite 300W
Boulder, CO 80301

Project ID: 1158520004

ACZ Project ID: L66297

Daryl Longwell:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 14, 2007. This project has been assigned to ACZ's project number, L66297. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L66297. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 10, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



REPAD.01.06.05.02



McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-13 0-12"

ACZ Sample ID: **L66297-01**

Date Sampled: 11/05/07 11:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	53			mg/Kg	4	20	12/01/07 2:59	djt
Cadmium, total (3050)	M6010B ICP	5.8			mg/Kg	0.5	2	12/01/07 2:59	djt
Lead, total (3050)	M6010B ICP	1280	*		mg/Kg	4	20	12/01/07 2:59	djt
Zinc, total (3050)	M6010B ICP	1500	*		mg/Kg	1	5	12/01/07 2:59	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	81.1	*		%	0.1	0.5	11/26/07 12:48	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/26/07 11:15	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 8:38	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 11:00	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-13 1-2'8"

ACZ Sample ID: **L66297-02**

Date Sampled: 11/05/07 11:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	8	B		mg/Kg	4	20	12/01/07 3:24	djt
Cadmium, total (3050)	M6010B ICP		U		mg/Kg	0.5	2	12/01/07 3:24	djt
Lead, total (3050)	M6010B ICP	27		*	mg/Kg	4	20	12/01/07 3:24	djt
Zinc, total (3050)	M6010B ICP	132		*	mg/Kg	1	5	12/01/07 3:24	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	90.9	*		%	0.1	0.5	11/26/07 14:21	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/26/07 12:36	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 10:02	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 11:12	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-13 3'

ACZ Sample ID: **L66297-03**

Date Sampled: 11/05/07 11:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	11	B		mg/Kg	4	20	12/01/07 3:28	djt
Cadmium, total (3050)	M6010B ICP	1.2	B		mg/Kg	0.5	2	12/01/07 3:28	djt
Lead, total (3050)	M6010B ICP	23		*	mg/Kg	4	20	12/01/07 3:28	djt
Zinc, total (3050)	M6010B ICP	159		*	mg/Kg	1	5	12/01/07 3:28	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	69.3		*	%	0.1	0.5	11/26/07 15:54	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/26/07 13:58	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 10:30	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 11:24	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-14 0-6"

ACZ Sample ID: **L66297-04**

Date Sampled: 11/05/07 10:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	747			mg/Kg	4	20	12/01/07 3:32	djt
Cadmium, total (3050)	M6010B ICP	106			mg/Kg	0.5	2	12/01/07 3:32	djt
Lead, total (3050)	M6010B ICP	18400	*		mg/Kg	4	20	12/01/07 3:32	djt
Zinc, total (3050)	M6010B ICP	28000	*		mg/Kg	2	10	12/04/07 1:03	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	86.0	*		%	0.1	0.5	11/26/07 17:27	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/26/07 15:20	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 10:58	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 11:37	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-14 1-2'

ACZ Sample ID: **L66297-05**

Date Sampled: 11/05/07 10:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	9	B		mg/Kg	4	20	12/01/07 3:37	djt
Cadmium, total (3050)	M6010B ICP	1.2	B		mg/Kg	0.5	2	12/01/07 3:37	djt
Lead, total (3050)	M6010B ICP	35		*	mg/Kg	4	20	12/01/07 3:37	djt
Zinc, total (3050)	M6010B ICP	163		*	mg/Kg	1	5	12/01/07 3:37	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	65.4	*		%	0.1	0.5	11/26/07 19:00	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/26/07 16:42	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 11:26	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 11:49	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-15 0-6"

ACZ Sample ID: **L66297-06**

Date Sampled: 11/05/07 12:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	21			mg/Kg	4	20	12/01/07 3:41	djt
Cadmium, total (3050)	M6010B ICP	15.7			mg/Kg	0.5	2	12/01/07 3:41	djt
Lead, total (3050)	M6010B ICP	632	*		mg/Kg	4	20	12/01/07 3:41	djt
Zinc, total (3050)	M6010B ICP	2450	*		mg/Kg	1	5	12/01/07 3:41	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	80.2	*		%	0.1	0.5	11/26/07 20:33	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/26/07 18:04	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 11:54	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 12:01	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-15 1-3'

ACZ Sample ID: **L66297-07**

Date Sampled: 11/05/07 12:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP		U		mg/Kg	4	20	12/01/07 3:45	djt
Cadmium, total (3050)	M6010B ICP	0.6	B		mg/Kg	0.5	2	12/01/07 3:45	djt
Lead, total (3050)	M6010B ICP	22	*		mg/Kg	4	20	12/01/07 3:45	djt
Zinc, total (3050)	M6010B ICP	200	*		mg/Kg	1	5	12/01/07 3:45	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	90.0	*		%	0.1	0.5	11/26/07 22:07	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/26/07 19:26	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 12:22	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 12:14	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-17 0-1'

ACZ Sample ID: **L66297-08**

Date Sampled: 11/05/07 15:30

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	760	*		mg/Kg	40	200	12/04/07 1:07	djt
Cadmium, total (3050)	M6010B ICP	330			mg/Kg	5	20	12/04/07 1:07	djt
Lead, total (3050)	M6010B ICP	26300	*		mg/Kg	40	200	12/04/07 1:07	djt
Zinc, total (3050)	M6010B ICP	59600	*		mg/Kg	10	50	12/04/07 1:07	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	88.3	*		%	0.1	0.5	11/26/07 23:40	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/26/07 20:47	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 12:50	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 12:26	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-17 1-2.5'

ACZ Sample ID: **L66297-09**

Date Sampled: 11/05/07 15:30

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	7	B		mg/Kg	4	20	12/01/07 3:53	djt
Cadmium, total (3050)	M6010B ICP	0.8	B		mg/Kg	0.5	2	12/01/07 3:53	djt
Lead, total (3050)	M6010B ICP	30		*	mg/Kg	4	20	12/01/07 3:53	djt
Zinc, total (3050)	M6010B ICP	214		*	mg/Kg	1	5	12/01/07 3:53	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	69.4		*	%	0.1	0.5	11/27/07 1:13	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/26/07 22:09	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 13:18	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 12:38	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-17 2.5-4'

ACZ Sample ID: **L66297-10**

Date Sampled: 11/05/07 15:30

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	9	B		mg/Kg	4	20	12/01/07 3:58	djt
Cadmium, total (3050)	M6010B ICP	0.9	B		mg/Kg	0.5	2	12/01/07 3:58	djt
Lead, total (3050)	M6010B ICP	148		*	mg/Kg	4	20	12/01/07 3:58	djt
Zinc, total (3050)	M6010B ICP	207		*	mg/Kg	1	5	12/01/07 3:58	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	83.4		*	%	0.1	0.5	11/27/07 2:46	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/26/07 23:31	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 13:46	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 12:51	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-18 0-6"

ACZ Sample ID: **L66297-11**

Date Sampled: 11/05/07 16:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	736			mg/Kg	4	20	12/01/07 4:02	djt
Cadmium, total (3050)	M6010B ICP	101			mg/Kg	0.5	2	12/01/07 4:02	djt
Lead, total (3050)	M6010B ICP	1060	*		mg/Kg	4	20	12/01/07 4:02	djt
Zinc, total (3050)	M6010B ICP	8210	*		mg/Kg	1	5	12/01/07 4:02	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	35.5	*		%	0.1	0.5	11/27/07 4:19	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 0:53	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 14:14	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 13:03	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-18 6-12"

ACZ Sample ID: **L66297-12**

Date Sampled: 11/05/07 16:48

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	490			mg/Kg	4	20	12/01/07 4:14	djt
Cadmium, total (3050)	M6010B ICP	155			mg/Kg	0.5	2	12/01/07 4:14	djt
Lead, total (3050)	M6010B ICP	15100	*		mg/Kg	4	20	12/01/07 4:14	djt
Zinc, total (3050)	M6010B ICP	30600	*		mg/Kg	2	10	12/04/07 1:11	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	84.2	*		%	0.1	0.5	11/27/07 5:52	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 2:15	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 14:42	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 13:15	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-19 1.5'

ACZ Sample ID: **L66297-13**

Date Sampled: 11/06/07 10:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	695			mg/Kg	4	20	12/01/07 4:19	djt
Cadmium, total (3050)	M6010B ICP	116			mg/Kg	0.5	2	12/01/07 4:19	djt
Lead, total (3050)	M6010B ICP	25500	*		mg/Kg	20	100	12/04/07 21:23	wfg
Zinc, total (3050)	M6010B ICP	25100	*		mg/Kg	5	30	12/04/07 21:23	wfg

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	74.3	*		%	0.1	0.5	11/27/07 7:25	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 3:37	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 15:10	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 13:28	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-19 3.5'

ACZ Sample ID: **L66297-14**

Date Sampled: 11/06/07 10:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	1290	*		mg/Kg	40	200	12/04/07 1:20	djt
Cadmium, total (3050)	M6010B ICP	598			mg/Kg	5	20	12/04/07 1:20	djt
Lead, total (3050)	M6010B ICP	29300	*		mg/Kg	40	200	12/04/07 1:20	djt
Zinc, total (3050)	M6010B ICP	107000	*		mg/Kg	10	50	12/04/07 1:20	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	83.1	*		%	0.1	0.5	11/27/07 8:59	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 4:59	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 15:38	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 13:40	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-20 6-12"

ACZ Sample ID: **L66297-15**

Date Sampled: 11/06/07 12:15

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	258			mg/Kg	4	20	12/01/07 4:27	djt
Cadmium, total (3050)	M6010B ICP	38.0			mg/Kg	0.5	2	12/01/07 4:27	djt
Lead, total (3050)	M6010B ICP	4640	*		mg/Kg	4	20	12/01/07 4:27	djt
Zinc, total (3050)	M6010B ICP	7960	*		mg/Kg	1	5	12/01/07 4:27	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	89.9	*		%	0.1	0.5	11/27/07 10:32	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 6:20	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 16:06	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 13:52	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-21 0-12"

ACZ Sample ID: **L66297-16**

Date Sampled: 11/06/07 14:30

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	541			mg/Kg	4	20	12/01/07 4:31	djt
Cadmium, total (3050)	M6010B ICP	87.8			mg/Kg	0.5	2	12/01/07 4:31	djt
Lead, total (3050)	M6010B ICP	8630	*		mg/Kg	4	20	12/01/07 4:31	djt
Zinc, total (3050)	M6010B ICP	16500	*		mg/Kg	1	5	12/01/07 4:31	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	92.7	*		%	0.1	0.5	11/27/07 12:05	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 7:42	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 16:34	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 14:05	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-22 0-6"

ACZ Sample ID: **L66297-17**

Date Sampled: 11/06/07 15:00

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	352			mg/Kg	4	20	12/01/07 4:35	djt
Cadmium, total (3050)	M6010B ICP	52.9			mg/Kg	0.5	2	12/01/07 4:35	djt
Lead, total (3050)	M6010B ICP	7990	*		mg/Kg	4	20	12/01/07 4:35	djt
Zinc, total (3050)	M6010B ICP	10200	*		mg/Kg	1	5	12/01/07 4:35	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	86.9	*		%	0.1	0.5	11/27/07 13:38	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 9:04	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 17:01	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 14:17	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-22 6-12"

ACZ Sample ID: **L66297-18**

Date Sampled: 11/06/07 15:00

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	21			mg/Kg	4	20	12/01/07 4:40	djt
Cadmium, total (3050)	M6010B ICP	3.1			mg/Kg	0.5	2	12/01/07 4:40	djt
Lead, total (3050)	M6010B ICP	153	*		mg/Kg	4	20	12/01/07 4:40	djt
Zinc, total (3050)	M6010B ICP	502	*		mg/Kg	1	5	12/01/07 4:40	djt

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	79.8	*		%	0.1	0.5	11/27/07 15:11	crl

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 10:26	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 17:29	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 14:29	crl

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

<i>B</i>	Analyte concentration detected at a value between MDL and PQL.
<i>H</i>	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
<i>U</i>	Analyte was analyzed for but not detected at the indicated MDL

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66297**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66297-01	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)		M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-02	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)		M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-03	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)		M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-04	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		WG237244 Zinc, total (3050)		M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-05	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)		M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-06	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)		M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-07	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)		M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66297**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66297-08	WG237244	Arsenic, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L66297-09	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-10	WG237145	Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-11	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-12	WG237145	Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L66297-13	WG237281	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66297**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66297-14	WG237244	Arsenic, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L66297-15	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-16	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-17	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66297-18	WG237145	Lead, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66297**

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent

CLPSOW390, PART F, D-98

McCulley, Frick and Gilman, Inc.
 1158520004

ACZ Project ID: L66297
 Date Received: 11/14/2007
 Received By: ksj
 Date Printed: 12/6/2007

Receipt Verification

- 1) Does this project require special handling procedures such as CLP protocol?
- 2) Are the custody seals on the cooler intact?
- 3) Are the custody seals on the sample containers intact?
- 4) Is there a Chain of Custody or other directive shipping papers present?
- 5) Is the Chain of Custody complete?
- 6) Is the Chain of Custody in agreement with the samples received?
- 7) Is there enough sample for all requested analyses?
- 8) Are all samples within holding times for requested analyses?
- 9) Were all sample containers received intact?
- 10) Are the temperature blanks present?
- 11) Are the trip blanks (VOA and/or Cyanide) present?
- 12) Are samples requiring no headspace, headspace free?
- 13) Do the samples that require a Foreign Soils Permit have one?

YES	NO	NA
		X
X		
		X
X		
X		
X		
X		
X		
X		
		X
		X
		X
		X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
NA4932		17.1	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

McCulley, Frick and Gilman, Inc.
1158520004

ACZ Project ID: L66297
Date Received: 11/14/2007
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T >12	N/A	RAD	ID
L66297-01	TP-13 0-12"									X		<input type="checkbox"/>
L66297-02	TP-13 1-2'8"									X		<input type="checkbox"/>
L66297-03	TP-13 3'									X		<input type="checkbox"/>
L66297-04	TP-14 0-6"									X		<input type="checkbox"/>
L66297-05	TP-14 1-2'									X		<input type="checkbox"/>
L66297-06	TP-15 0-6"									X		<input type="checkbox"/>
L66297-07	TP-15 1-3'									X		<input type="checkbox"/>
L66297-08	TP-17 0-1'									X		<input type="checkbox"/>
L66297-09	TP-17 1-2.5'									X		<input type="checkbox"/>
L66297-10	TP-17 2.5-4'									X		<input type="checkbox"/>
L66297-11	TP-18 0-6"									X		<input type="checkbox"/>
L66297-12	TP-18 6-12"									X		<input type="checkbox"/>
L66297-13	TP-19 1.5'									X		<input type="checkbox"/>
L66297-14	TP-19 3.5'									X		<input type="checkbox"/>
L66297-15	TP-20 6-12"									X		<input type="checkbox"/>
L66297-16	TP-21 0-12"									X		<input type="checkbox"/>
L66297-17	TP-22 0-6"									X		<input type="checkbox"/>
L66297-18	TP-22 6-12"									X		<input type="checkbox"/>

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 μ R/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: ksj

ACZ Laboratories, Inc

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**CHAIN OF
CUSTODY****Report to:**

Name: **Daryl Longwell**
 Company: **Tetra Tech.**
 E-mail: **daryl.longwell@tetratech.com**

Address: **4900 Pearl East Circle
Suite 300W Boulder, CO 80302**
 Telephone: **303-588-0902**

Copy of Report to:

Name: **Brianna Shanklin**
 Company: **Tetra Tech**

E-mail: **Brianna.Shanklin@tetratech.com**
 Telephone: **303-772-5282**

Invoice to:

Name: **Daryl Longwell**
 Company: **Tetra Tech.**
 E-mail: **daryl.longwell@tetratech.com**

Address: **4900 Pearl East Circle
Suite 300 W Boulder CO 80301**
 Telephone: **303-588-0902**

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES
NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION**ANALYSES REQUESTED (attach list or use quote number)**Quote #: **SILVER-CRK-MTLS**Project/PO #: **1158520004**Reporting state for compliance testing: **Utah**Sampler's Name: **Jim Kienholz**

Are any samples NRC licensable material?

SAMPLE IDENTIFICATION		DATE:TIME		Matrix	# of Containers	sample prep.	Arsenic	Cadmium	Lead	ZINC	% Solids
Sample ID	Depth	Date	Time	TP-13	0-12"	11/5/2007	11:45				
TP-1	1.5'	11/6/2007	8:05	TP-13	1-2'8"	11/5/2007	11:45				
TP-1	2.5'	11/6/2007	8:05	TP-13	3'	11/5/2007	11:45				
TP-2	2.5'	11/6/2007	9:05	TP-14	0-6"	11/5/2007	10:45				
TP-3	2.5'	11/6/2007	8:40	TP-14	1-2'	11/5/2007	10:45				
TP-3	3.5'	11/6/2007	8:40	TP-15	0-6"	11/5/2007	12:45				
TP-4	1.5'	11/6/2007	10:15	TP-15	1-3'	11/5/2007	12:45				
TP-4	3-4'	11/6/2007	10:15	TP-17	0-1'	11/5/2007	15:30				
TP-5	1.5'	11/6/2007	9:45	TP-17	1-2.5'	11/5/2007	15:30				
TP-5	3'	11/6/2007	9:45	TP-17	2.5-4'	11/5/2007	15:30				
TP-6	1-2'	11/6/2007	13:00	TP-18	0-6"	11/5/2007	16:45				
TP-7	2'	11/6/2007	12:45	TP-18	6-12"	11/5/2007	16:48				
TP-7	3.5'	11/5/2007	12:45	TP-19	1.5'	11/6/2007	10:45				
TP-9	2.5-3'	11/5/2007	16:25	TP-19	3.5'	11/6/2007	10:45				
TP-11	0-2'	11/5/2007	14:30	TP-20	6-12"	11/6/2007	12:15				
TP-11	2-2.5'	11/5/2007	14:30	TP-21	0-12"	11/6/2007	14:30				
TP-11	2.5-3'	11/5/2007	14:30	TP-22	0-6"	11/6/2007	15:00				
TP-12	1-2'	11/5/2007	13:45	TP-22	6-12"	11/6/2007	15:00				
TP-12	2.5-3'	11/5/2007	13:45								

COPY

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

REINQUISITED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Jim Kieholz & Christy	11/7/07 7PM	Janna Simonsen	11/7/07 7PM
Janna Simonsen	11/12/07 5PM	FEDEX	11/12/07 5PM

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**Analytical
Quote**

Brianna Shanklin
Rocky Mountain Consultants, Inc.
1900 South Sunset Street Suite 1-F
Longmont, CO 80501

Page 1 of 2
10/8/2007**Quote Number: SILVER-CRK-MTLS**

Matrix:	Soil	Silver Creek Soils - Metals		
Parameter	Method		Detection Limit	Cost/Sample
Metals Analysis				
Arsenic, total (3050)	M6010B ICP		4 mg/Kg	\$8.10
Cadmium, total (3050)	M6010B ICP		0.5 mg/Kg	\$8.10
Lead, total (3050)	M6010B ICP		4 mg/Kg	\$8.10
Zinc, total (3050)	M6010B ICP		1 mg/Kg	\$8.10
Sample Preparation				
Air Dry at 34 Degrees C	USDA No. 1, 1972			\$4.50
Digestion - Hot Plate	M3050B ICP			\$12.60
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2			\$7.20
Soil Analysis				
Solids, Percent	CLPSOW390, PART F, D-98	0.1 %		\$4.50
		Cost/Sample:		\$61.20

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Quote

Brianna Shanklin
Rocky Mountain Consultants, Inc.
1900 South Sunset Street Suite 1-F
Longmont, CO 80501

Page 2 of 2
10/8/2007

Quote Number: SILVER-CRK-MTLS

Pricing includes shipment of all standard sample containers and related paperwork by UPS Ground Service. Please allow three to five days for delivery when ordering containers. ACZ must be notified prior to receiving samples of all special requests such as electronic data deliverables or special reporting requirements. The client will be charged for special sample containers or express shipping and additional charges may apply for non-standard requests.

This quotation is valid for six months from the bid date and must be signed and returned to ACZ before project(s) is received. The authorized signature represents acceptance of the pricing as well as the general terms and conditions of ACZ Laboratories, Inc. Our general terms and conditions can be downloaded from our web site at <http://www.acz.com/eservices/download.html>.

All orders are subject to a minimum charge of \$100.00 and may incur a \$10.00/sample disposal fee for any samples deemed to be hazardous.

ACZ Representative (Authorized signature and date)

Client Representative (Authorized signature and date)

December 10, 2007

Report to:

Daryl Longwell
McCulley, Frick and Gilman, Inc.
4900 Pearl East Circle Suite 300W
Boulder, CO 80301

cc: Brianna Shanklin

Bill to:

Accounts Payable
McCulley, Frick and Gilman, Inc.
4900 Pearl East Circle Suite 300W
Boulder, CO 80301

Project ID: 1158520004

ACZ Project ID: L66299

Daryl Longwell:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 14, 2007. This project has been assigned to ACZ's project number, L66299. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L66299. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 10, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



REPAD.01.06.05.02



McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-1 1.5'

ACZ Sample ID: **L66299-01**

Date Sampled: 11/06/07 08:05

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	118	*	mg/Kg	4	20	12/01/07 5:46	djt	
Cadmium, total (3050)	M6010B ICP	29.2	*	mg/Kg	0.5	2	12/01/07 5:46	djt	
Lead, total (3050)	M6010B ICP	2760	*	mg/Kg	4	20	12/01/07 5:46	djt	
Zinc, total (3050)	M6010B ICP	8360	*	mg/Kg	1	5	12/01/07 5:46	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	92.0	*	%	0.1	0.5	11/26/07 12:47	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 11:48	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 9:17	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 11:00	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-1 2.5'

ACZ Sample ID: **L66299-02**

Date Sampled: 11/06/07 08:05

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	182	*	mg/Kg	4	20	12/01/07 5:51	djt	
Cadmium, total (3050)	M6010B ICP	45.3	*	mg/Kg	0.5	2	12/01/07 5:51	djt	
Lead, total (3050)	M6010B ICP	3490	*	mg/Kg	4	20	12/01/07 5:51	djt	
Zinc, total (3050)	M6010B ICP	8360	*	mg/Kg	1	5	12/01/07 5:51	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	81.0	*	%	0.1	0.5	11/26/07 14:19	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 13:10	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 9:43	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 11:12	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-2 2.5'

ACZ Sample ID: **L66299-03**

Date Sampled: 11/06/07 09:05

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	261	*	mg/Kg	4	20	12/01/07 5:55	djt	
Cadmium, total (3050)	M6010B ICP	41.0	*	mg/Kg	0.5	2	12/01/07 5:55	djt	
Lead, total (3050)	M6010B ICP	3430	*	mg/Kg	4	20	12/01/07 5:55	djt	
Zinc, total (3050)	M6010B ICP	8060	*	mg/Kg	1	5	12/01/07 5:55	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	86.8	*	%	0.1	0.5	11/26/07 15:52	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 14:32	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 10:09	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 11:24	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-3 2.5'

ACZ Sample ID: **L66299-04**

Date Sampled: 11/06/07 08:40

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	292	*	mg/Kg	4	20	12/01/07 5:59	djt	
Cadmium, total (3050)	M6010B ICP	66.2	*	mg/Kg	0.5	2	12/01/07 5:59	djt	
Lead, total (3050)	M6010B ICP	4490	*	mg/Kg	4	20	12/01/07 5:59	djt	
Zinc, total (3050)	M6010B ICP	15100	*	mg/Kg	1	5	12/01/07 5:59	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	92.0	*	%	0.1	0.5	11/26/07 17:24	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 15:53	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 10:35	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 11:37	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-3 3.5'

ACZ Sample ID: **L66299-05**

Date Sampled: 11/06/07 08:40

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	1280	*	mg/Kg	20	100	12/04/07 1:36	djt	
Cadmium, total (3050)	M6010B ICP	221	*	mg/Kg	3	8	12/04/07 1:36	djt	
Lead, total (3050)	M6010B ICP	27000		mg/Kg	20	100	12/04/07 1:36	djt	
Zinc, total (3050)	M6010B ICP	39900	*	mg/Kg	5	30	12/04/07 1:36	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	76.0	*	%	0.1	0.5	11/26/07 18:56	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 17:15	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 11:01	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 11:49	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-4 1.5'

ACZ Sample ID: **L66299-06**

Date Sampled: 11/06/07 10:15

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	468	*	mg/Kg	4	20	12/01/07 6:16	djt	
Cadmium, total (3050)	M6010B ICP	59.6	*	mg/Kg	0.5	2	12/01/07 6:16	djt	
Lead, total (3050)	M6010B ICP	5250	*	mg/Kg	4	20	12/01/07 6:16	djt	
Zinc, total (3050)	M6010B ICP	10800	*	mg/Kg	1	5	12/01/07 6:16	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	87.4	*	%	0.1	0.5	11/26/07 20:29	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 18:37	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 11:27	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 12:01	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-4 3-4'

ACZ Sample ID: **L66299-07**

Date Sampled: 11/06/07 10:15

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	44	*	mg/Kg	4	20	12/01/07 6:20	djt	
Cadmium, total (3050)	M6010B ICP	4.8	*	mg/Kg	0.5	2	12/01/07 6:20	djt	
Lead, total (3050)	M6010B ICP	189	*	mg/Kg	4	20	12/01/07 6:20	djt	
Zinc, total (3050)	M6010B ICP	500	*	mg/Kg	1	5	12/01/07 6:20	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	63.3	*	%	0.1	0.5	11/26/07 22:01	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 19:59	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 11:53	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 12:14	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-5 1.5'

ACZ Sample ID: **L66299-08**

Date Sampled: 11/06/07 09:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	277	*	mg/Kg	4	20	12/01/07 6:24	djt	
Cadmium, total (3050)	M6010B ICP	45.9	*	mg/Kg	0.5	2	12/01/07 6:24	djt	
Lead, total (3050)	M6010B ICP	4720	*	mg/Kg	4	20	12/01/07 6:24	djt	
Zinc, total (3050)	M6010B ICP	7290	*	mg/Kg	1	5	12/01/07 6:24	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	89.1	*	%	0.1	0.5	11/26/07 23:33	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 21:21	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 12:19	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 12:26	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-5 3'

ACZ Sample ID: **L66299-09**

Date Sampled: 11/06/07 09:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	29	*	mg/Kg	4	20	12/01/07 6:28	djt	
Cadmium, total (3050)	M6010B ICP	2.8	*	mg/Kg	0.5	2	12/01/07 6:28	djt	
Lead, total (3050)	M6010B ICP	212	*	mg/Kg	4	20	12/01/07 6:28	djt	
Zinc, total (3050)	M6010B ICP	722	*	mg/Kg	1	5	12/01/07 6:28	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	63.7	*	%	0.1	0.5	11/27/07 1:06	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 22:43	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 12:45	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 12:38	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-6 1-2'

ACZ Sample ID: **L66299-10**

Date Sampled: 11/06/07 13:00

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	187	*	mg/Kg	4	20	12/01/07 6:33	djt	
Cadmium, total (3050)	M6010B ICP	42.3	*	mg/Kg	0.5	2	12/01/07 6:33	djt	
Lead, total (3050)	M6010B ICP	3700	*	mg/Kg	4	20	12/01/07 6:33	djt	
Zinc, total (3050)	M6010B ICP	10200	*	mg/Kg	1	5	12/01/07 6:33	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	88.6	*	%	0.1	0.5	11/27/07 2:38	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 0:04	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 13:11	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 12:51	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-7 2'

ACZ Sample ID: **L66299-11**

Date Sampled: 11/06/07 12:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	517	*	mg/Kg	4	20	12/01/07 6:37	djt	
Cadmium, total (3050)	M6010B ICP	83.1	*	mg/Kg	0.5	2	12/01/07 6:37	djt	
Lead, total (3050)	M6010B ICP	14300	*	mg/Kg	4	20	12/01/07 6:37	djt	
Zinc, total (3050)	M6010B ICP	16000	*	mg/Kg	1	5	12/01/07 6:37	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	69.7	*	%	0.1	0.5	11/27/07 4:11	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 1:26	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 13:36	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 13:03	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-7 3.5'

ACZ Sample ID: **L66299-12**

Date Sampled: 11/05/07 12:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	297	*	mg/Kg	4	20	12/01/07 6:41	djt	
Cadmium, total (3050)	M6010B ICP	55.9	*	mg/Kg	0.5	2	12/01/07 6:41	djt	
Lead, total (3050)	M6010B ICP	4470	*	mg/Kg	4	20	12/01/07 6:41	djt	
Zinc, total (3050)	M6010B ICP	11000	*	mg/Kg	1	5	12/01/07 6:41	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	93.9	*	%	0.1	0.5	11/27/07 5:43	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 2:48	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 14:02	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 13:15	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-9 2.5-3'

ACZ Sample ID: **L66299-13**

Date Sampled: 11/05/07 16:25

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	338	*	mg/Kg	4	20	12/01/07 6:45	djt	
Cadmium, total (3050)	M6010B ICP	74.2	*	mg/Kg	0.5	2	12/01/07 6:45	djt	
Lead, total (3050)	M6010B ICP	8340	*	mg/Kg	4	20	12/01/07 6:45	djt	
Zinc, total (3050)	M6010B ICP	14400	*	mg/Kg	1	5	12/01/07 6:45	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	88.7	*	%	0.1	0.5	11/27/07 7:15	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 4:10	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 14:28	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 13:28	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-11 0-2'

ACZ Sample ID: **L66299-14**

Date Sampled: 11/05/07 14:30

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	322	*	mg/Kg	4	20	12/01/07 6:49	djt	
Cadmium, total (3050)	M6010B ICP	87.3	*	mg/Kg	0.5	2	12/01/07 6:49	djt	
Lead, total (3050)	M6010B ICP	7280	*	mg/Kg	4	20	12/01/07 6:49	djt	
Zinc, total (3050)	M6010B ICP	15300	*	mg/Kg	1	5	12/01/07 6:49	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	97.6	*	%	0.1	0.5	11/27/07 8:48	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 5:32	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 14:54	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 13:40	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-11 2-2.5'

ACZ Sample ID: **L66299-15**

Date Sampled: 11/05/07 14:30

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	855	*	mg/Kg	4	20	12/01/07 7:02	djt	
Cadmium, total (3050)	M6010B ICP	144	*	mg/Kg	0.5	2	12/01/07 7:02	djt	
Lead, total (3050)	M6010B ICP	27000		mg/Kg	8	40	12/04/07 1:40	djt	
Zinc, total (3050)	M6010B ICP	31500	*	mg/Kg	2	10	12/04/07 1:40	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	83.9	*	%	0.1	0.5	11/27/07 10:20	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 6:54	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 15:20	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 13:52	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-11 2.5-3'

ACZ Sample ID: **L66299-16**

Date Sampled: 11/05/07 14:30

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	38	*	mg/Kg	4	20	12/01/07 7:06	djt	
Cadmium, total (3050)	M6010B ICP	24.9	*	mg/Kg	0.5	2	12/01/07 7:06	djt	
Lead, total (3050)	M6010B ICP	185	*	mg/Kg	4	20	12/01/07 7:06	djt	
Zinc, total (3050)	M6010B ICP	1310	*	mg/Kg	1	5	12/01/07 7:06	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	91.3	*	%	0.1	0.5	11/27/07 11:52	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 8:16	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 15:46	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 14:05	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-12 1'-2'

ACZ Sample ID: **L66299-17**

Date Sampled: 11/05/07 13:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	721	*	mg/Kg	4	20	12/01/07 7:11	djt	
Cadmium, total (3050)	M6010B ICP	117	*	mg/Kg	0.5	2	12/01/07 7:11	djt	
Lead, total (3050)	M6010B ICP	15300	*	mg/Kg	4	20	12/01/07 7:11	djt	
Zinc, total (3050)	M6010B ICP	24700	*	mg/Kg	2	10	12/04/07 1:53	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	91.8	*	%	0.1	0.5	11/27/07 13:25	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 9:37	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 16:12	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 14:17	crl

McCulley, Frick and Gilman, Inc.

Project ID: 1158520004

Sample ID: TP-12 2.5-3'

ACZ Sample ID: **L66299-18**

Date Sampled: 11/05/07 13:45

Date Received: 11/14/07

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6010B ICP	43	*	mg/Kg	4	20	12/01/07 7:15	djt	
Cadmium, total (3050)	M6010B ICP	24.9	*	mg/Kg	0.5	2	12/01/07 7:15	djt	
Lead, total (3050)	M6010B ICP	60	*	mg/Kg	4	20	12/01/07 7:15	djt	
Zinc, total (3050)	M6010B ICP	2160	*	mg/Kg	1	5	12/01/07 7:15	djt	

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	CLPSOW390, PART F, D-98	61.6	*	%	0.1	0.5	11/27/07 14:57	crl	

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 10:59	crl
Digestion - Hot Plate	M3050B ICP							11/29/07 16:38	bjl
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2							11/28/07 14:29	crl

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

<i>B</i>	Analyte concentration detected at a value between MDL and PQL.
<i>H</i>	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
<i>U</i>	Analyte was analyzed for but not detected at the indicated MDL

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66299**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66299-01	WG237146	Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L66299-02	WG237146	Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L66299-03	WG237146	Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ Project ID: **L66299**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66299-04	WG237146	Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG237244	Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Cadmium, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
L66299-06	WG237146	Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG237244	Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66299**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66299-07	WG237146	Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L66299-08	WG237146	Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L66299-09	WG237146	Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66299**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66299-10	WG237146	Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L66299-11	WG237146	Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L66299-12	WG237146	Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66299**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66299-13	WG237146	Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L66299-14	WG237146	Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L66299-15	WG237146	Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Zinc, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
WG237244		Zinc, total (3050)	M6010B ICP		

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66299**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66299-16	WG237146	Arsenic, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG237244	Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
			M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Lead, total (3050)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L66299-17	WG237146	Zinc, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG237244		M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Cadmium, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
			M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Lead, total (3050)	M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L66299-18	WG237146	Zinc, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Lead, total (3050)	M6010B ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG237244	Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66299**

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent

CLPSOW390, PART F, D-98

McCulley, Frick and Gilman, Inc.
 1158520004

ACZ Project ID: L66299
 Date Received: 11/14/2007
 Received By: ksj
 Date Printed: 12/6/2007

Receipt Verification

- 1) Does this project require special handling procedures such as CLP protocol?
- 2) Are the custody seals on the cooler intact?
- 3) Are the custody seals on the sample containers intact?
- 4) Is there a Chain of Custody or other directive shipping papers present?
- 5) Is the Chain of Custody complete?
- 6) Is the Chain of Custody in agreement with the samples received?
- 7) Is there enough sample for all requested analyses?
- 8) Are all samples within holding times for requested analyses?
- 9) Were all sample containers received intact?
- 10) Are the temperature blanks present?
- 11) Are the trip blanks (VOA and/or Cyanide) present?
- 12) Are samples requiring no headspace, headspace free?
- 13) Do the samples that require a Foreign Soils Permit have one?

YES	NO	NA
		X
X		
		X
X		
X		
X		
X		
X		
X		
		X
		X
		X
		X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
NA4932		17.1	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

McCulley, Frick and Gilman, Inc.
1158520004

ACZ Project ID: L66299
Date Received: 11/14/2007
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T >12	N/A	RAD	ID
L66299-01	TP-1 1.5'									X		<input type="checkbox"/>
L66299-02	TP-1 2.5'									X		<input type="checkbox"/>
L66299-03	TP-2 2.5'									X		<input type="checkbox"/>
L66299-04	TP-3 2.5'									X		<input type="checkbox"/>
L66299-05	TP-3 3.5'									X		<input type="checkbox"/>
L66299-06	TP-4 1.5'									X		<input type="checkbox"/>
L66299-07	TP-4 3-4'									X		<input type="checkbox"/>
L66299-08	TP-5 1.5'									X		<input type="checkbox"/>
L66299-09	TP-5 3'									X		<input type="checkbox"/>
L66299-10	TP-6 1-2'									X		<input type="checkbox"/>
L66299-11	TP-7 2'									X		<input type="checkbox"/>
L66299-12	TP-7 3.5'									X		<input type="checkbox"/>
L66299-13	TP-9 2.5-3'									X		<input type="checkbox"/>
L66299-14	TP-11 0-2'									X		<input type="checkbox"/>
L66299-15	TP-11 2-2.5'									X		<input type="checkbox"/>
L66299-16	TP-11 2.5-3'									X		<input type="checkbox"/>
L66299-17	TP-12 1'-2'									X		<input type="checkbox"/>
L66299-18	TP-12 2.5-3'									X		<input type="checkbox"/>

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 μ R/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: ksj

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**CHAIN OF
CUSTODY**

Report to:

Name: **Daryl Longwell**
 Company: **Tetra Tech.**
 E-mail: **daryl.longwell@tetratech.com**

Address: **4900 Pearl East Circle
Suite 300 W Boulder, CO 80301**
 Telephone: **303-588-0902**

Copy of Report to:

Name: **Brianna Shanklin**
 Company: **Tetra Tech**

E-mail: **Brianna.Shanklin@tetratech.com**
 Telephone: **303-772-5282**

Invoice to:

Name: **Daryl Longwell**
 Company: **Tetra Tech.**
 E-mail: **daryl.longwell@tetrach.com**

Address: **4900 Pearl East Circle
Suite 300 W Boulder CO 80301**
 Telephone: **303-588-0902**

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

YES
NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO"

is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: **SILVER-CRK-MTLS**Project/PO #: **1158520004**Reporting state for compliance testing: **Utah**Sampler's Name: **Jim Kienholz**

Are any samples NRC licensable material?

SAMPLE IDENTIFICATION				DATE:TIME	Matrix	# of Containers	sample prep.	Arsenic	Cadmium	Lead	ZINC	% Solids
Sample ID	Depth	Date	Time	TP-13		0-12"	11/5/2007	11:45				
TP-1	1.5'	11/6/2007	8:05	TP-13		1-2'8"	11/5/2007	11:45				
TP-1	2.5'	11/6/2007	8:05	TP-13		3'	11/5/2007	11:45				
TP-2	2.5'	11/6/2007	9:05	TP-14		0-6"	11/5/2007	10:45				
TP-3	2.5'	11/6/2007	8:40	TP-14		1-2'	11/5/2007	10:45				
TP-3	3.5'	11/6/2007	8:40	TP-15		0-6"	11/5/2007	12:45				
TP-4	1.5'	11/6/2007	10:15	TP-15		1-3'	11/5/2007	12:45				
TP-4	3-4'	11/6/2007	10:15	TP-17		0-1'	11/5/2007	15:30				
TP-5	1.5'	11/6/2007	9:45	TP-17		1-2.5'	11/5/2007	15:30				
TP-5	3'	11/6/2007	9:45	TP-17		2.5-4'	11/5/2007	15:30				
TP-6	1-2'	11/6/2007	13:00	TP-18		0-6"	11/5/2007	16:45				
TP-7	2'	11/6/2007	12:45	TP-18		6-12"	11/5/2007	16:48				
TP-7	3.5'	11/5/2007	12:45	TP-19		1.5'	11/6/2007	10:45				
TP-9	2.5-3'	11/5/2007	16:25	TP-19		3.5'	11/6/2007	10:45				
TP-11	0-2'	11/5/2007	14:30	TP-20		6-12"	11/6/2007	12:15				
TP-11	2-2.5'	11/5/2007	14:30	TP-21		0-12"	11/6/2007	14:30				
TP-11	2.5-3'	11/5/2007	14:30	TP-22		0-6"	11/6/2007	15:00				
TP-12	1'-2'	11/5/2007	13:45	TP-22		6-12"	11/6/2007	15:00				
TP-12	2.5-3'	11/5/2007	13:45									

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Jim Kieholz & Christy	11/7/07 7PM	Janna Simonsen	11/7/07 7PM
Janna Simonsen	11/12/07 5PM	FEDEX	11/12/07 5PM

December 07, 2007

Report to:

Daryl Longwell
McCulley, Frick and Gilman, Inc.
4900 Pearl East Circle Suite 300W
Boulder, CO 80301

cc: Brianna Shanklin

Bill to:

Accounts Payable
McCulley, Frick and Gilman, Inc.
4900 Pearl East Circle Suite 300W
Boulder, CO 80301

Project ID: 115820004

ACZ Project ID: L66303

Daryl Longwell:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 14, 2007. This project has been assigned to ACZ's project number, L66303. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L66303. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 07, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than \$10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.



REPAD.01.06.05.02



McCulley, Frick and Gilman, Inc.

Project ID: 115820004

Sample ID: TP-1 2.5'

ACZ Sample ID: **L66303-01**

Date Sampled: 11/06/07 08:05

Date Received: 11/14/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	166			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	207			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	41			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	20.7	*		%	0.1	0.5	11/29/07 10:57	crl
pH, Saturated Paste	USDA No. 60 (21A)	6.8	*		units	0.1	0.1	11/28/07 20:48	bjl
Sulfur Forms	M600/2-78-054 3.2.4								
Sulfur Organic Residual		2.54	*		%	0.01	0.1	11/28/07 0:00	crl/lwt
Sulfur Pyritic Sulfide		2.46	*		%	0.01	0.1	11/28/07 0:00	crl/lwt
Sulfur Sulfate		0.31	*		%	0.01	0.1	11/28/07 0:00	crl/lwt
Sulfur Total		5.31	*		%	0.01	0.1	11/28/07 0:00	crl/lwt
Total Sulfur minus Sulfate		5.00	*		%	0.01	0.1	11/28/07 0:00	crl/lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 11:15	crl
Saturated Paste Extraction	USDA No. 60 (2)							11/28/07 17:21	bjl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/28/07 11:00	crl

McCulley, Frick and Gilman, Inc.

Project ID: 115820004

Sample ID: TP-2 2.5'

ACZ Sample ID: **L66303-02**

Date Sampled: 11/06/07 09:05

Date Received: 11/14/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	109			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	212			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	103			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	21.2	*		%	0.1	0.5	11/29/07 12:10	crl
pH, Saturated Paste	USDA No. 60 (21A)	7.4	*		units	0.1	0.1	11/28/07 21:49	bjl
Sulfur Forms	M600/2-78-054 3.2.4								
Sulfur Organic Residual		1.97	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Pyritic Sulfide		0.75	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Sulfate		0.78	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Total		3.50	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Total Sulfur minus Sulfate		2.72	*		%	0.01	0.1	11/29/07 0:00	crl/lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 13:53	crl
Saturated Paste Extraction	USDA No. 60 (2)							11/28/07 17:24	bjl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/28/07 11:23	crl

McCulley, Frick and Gilman, Inc.

Project ID: 115820004

Sample ID: TP-3 2.5'

ACZ Sample ID: **L66303-03**

Date Sampled: 11/06/07 08:40

Date Received: 11/14/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	73			t CaCO3/Kt	1	5	12/06/07 16:44	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	219			t CaCO3/Kt	1	5	12/06/07 16:44	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	146			t CaCO3/Kt	1	5	12/06/07 16:44	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3	21.9	*		%	0.1	0.5	11/29/07 12:46	crl
pH, Saturated Paste Sulfur Forms	USDA No. 60 (21A) M600/2-78-054 3.2.4	7.4	*		units	0.1	0.1	11/28/07 22:50	bjl
Sulfur Organic Residual		0.95	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Pyritic Sulfide		1.15	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Sulfate		0.23	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Total		2.33	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Total Sulfur minus Sulfate		2.10	*		%	0.01	0.1	11/29/07 0:00	crl/lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 16:31	crl
Saturated Paste Extraction	USDA No. 60 (2)							11/28/07 17:26	bjl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/28/07 11:46	crl

McCulley, Frick and Gilman, Inc.

Project ID: 115820004

Sample ID: TP-4 3-4'

ACZ Sample ID: **L66303-04**

Date Sampled: 11/06/07 10:15

Date Received: 11/14/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	21			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	34			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	13			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	3.4	*		%	0.1	0.5	11/29/07 13:22	crl
pH, Saturated Paste Sulfur Forms	USDA No. 60 (21A) M600/2-78-054 3.2.4	6.2	*		units	0.1	0.1	11/28/07 23:51	bjl
Sulfur Organic Residual		0.23	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Pyritic Sulfide		0.23	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Sulfate		0.21	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Total		0.67	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Total Sulfur minus Sulfate		0.46	*		%	0.01	0.1	11/29/07 0:00	crl/lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 19:10	crl
Saturated Paste Extraction	USDA No. 60 (2)							11/28/07 17:28	bjl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/28/07 12:10	crl

McCulley, Frick and Gilman, Inc.

Project ID: 115820004

Sample ID: TP-7 2'

ACZ Sample ID: **L66303-05**

Date Sampled: 11/06/07 12:45

Date Received: 11/14/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	91			t CaCO3/Kt	1	5	12/06/07 16:44	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	174			t CaCO3/Kt	1	5	12/06/07 16:44	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	83			t CaCO3/Kt	1	5	12/06/07 16:44	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3	17.4	*		%	0.1	0.5	11/29/07 13:58	crl
pH, Saturated Paste	USDA No. 60 (21A)	7.2	*		units	0.1	0.1	11/29/07 0:53	bjl
Sulfur Forms	M600/2-78-054 3.2.4								
Sulfur Organic Residual		0.53	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Pyritic Sulfide		2.12	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Sulfate		0.27	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Total		2.92	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Total Sulfur minus Sulfate		2.65	*		%	0.01	0.1	11/29/07 0:00	crl/lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/27/07 21:48	crl
Saturated Paste Extraction	USDA No. 60 (2)							11/28/07 17:31	bjl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/28/07 12:33	crl

McCulley, Frick and Gilman, Inc.

Project ID: 115820004

Sample ID: TP-12 1'-2'

ACZ Sample ID: **L66303-06**

Date Sampled: 11/05/07 13:45

Date Received: 11/14/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	60			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	134			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	74			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	13.4	*		%	0.1	0.5	11/29/07 14:35	crl
pH, Saturated Paste Sulfur Forms	USDA No. 60 (21A) M600/2-78-054 3.2.4	7.1	*		units	0.1	0.1	11/29/07 1:54	bjl
Sulfur Organic Residual		0.94	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Pyritic Sulfide		0.92	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Sulfate		0.07	B	*	%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Total		1.93		*	%	0.01	0.1	11/29/07 0:00	crl/lwt
Total Sulfur minus Sulfate		1.86		*	%	0.01	0.1	11/29/07 0:00	crl/lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 0:26	crl
Saturated Paste Extraction	USDA No. 60 (2)							11/28/07 17:33	bjl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/28/07 12:56	crl

McCulley, Frick and Gilman, Inc.

Project ID: 115820004

Sample ID: TP-13 0-12"

ACZ Sample ID: **L66303-07**

Date Sampled: 11/05/07 11:45

Date Received: 11/14/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	10			t CaCO3/Kt	1	5	12/06/07 16:44	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	23			t CaCO3/Kt	1	5	12/06/07 16:44	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	13			t CaCO3/Kt	1	5	12/06/07 16:44	calc
Neutralization Potential as CaCO3	M600/2-78-054 3.2.3	2.3	*		%	0.1	0.5	11/29/07 15:11	crl
pH, Saturated Paste	USDA No. 60 (21A)	7.1	*		units	0.1	0.1	11/29/07 2:55	bjl
Sulfur Forms	M600/2-78-054 3.2.4								
Sulfur Organic Residual		0.24	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Pyritic Sulfide		0.05	B	*	%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Sulfate		0.02	B	*	%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Total		0.31		*	%	0.01	0.1	11/29/07 0:00	crl/lwt
Total Sulfur minus Sulfate		0.29		*	%	0.01	0.1	11/29/07 0:00	crl/lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 3:05	crl
Saturated Paste Extraction	USDA No. 60 (2)							11/28/07 17:35	bjl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/28/07 13:20	crl

McCulley, Frick and Gilman, Inc.

Project ID: 115820004

Sample ID: TP-17 0-1'

ACZ Sample ID: **L66303-08**

Date Sampled: 11/05/07 15:30

Date Received: 11/14/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	129			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	137			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	8			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	13.7	*		%	0.1	0.5	11/29/07 15:47	crl
pH, Saturated Paste	USDA No. 60 (21A)	7.0	*		units	0.1	0.1	11/29/07 4:57	bjl
Sulfur Forms	M600/2-78-054 3.2.4								
Sulfur Organic Residual		2.92	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Pyritic Sulfide		1.15	*		%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Sulfate		0.07	B	*	%	0.01	0.1	11/29/07 0:00	crl/lwt
Sulfur Total		4.14		*	%	0.01	0.1	11/29/07 0:00	crl/lwt
Total Sulfur minus Sulfate		4.07		*	%	0.01	0.1	11/29/07 0:00	crl/lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 5:43	crl
Saturated Paste Extraction	USDA No. 60 (2)							11/28/07 17:40	bjl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/28/07 13:43	crl

McCulley, Frick and Gilman, Inc.

Project ID: 115820004

Sample ID: TP-19 3.5'

ACZ Sample ID: **L66303-09**

Date Sampled: 11/06/07 10:45

Date Received: 11/14/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	189			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	82			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	-107			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	8.2	*		%	0.1	0.5	11/29/07 16:23	crl
pH, Saturated Paste	USDA No. 60 (21A)	7.1	*		units	0.1	0.1	11/29/07 5:58	bjl
Sulfur Forms	M600/2-78-054 3.2.4								
Sulfur Organic Residual		5.81	*		%	0.01	0.1	11/30/07 0:00	crl/lwt
Sulfur Pyritic Sulfide		0.26	*		%	0.01	0.1	11/30/07 0:00	crl/lwt
Sulfur Sulfate			U	*	%	0.01	0.1	11/30/07 0:00	crl/lwt
Sulfur Total		6.05		*	%	0.01	0.1	11/30/07 0:00	crl/lwt
Total Sulfur minus Sulfate		6.05		*	%	0.01	0.1	11/30/07 0:00	crl/lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 8:21	crl
Saturated Paste Extraction	USDA No. 60 (2)							11/28/07 17:42	bjl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/28/07 14:06	crl

McCulley, Frick and Gilman, Inc.

Project ID: 115820004

Sample ID: TP-21 0-12"

ACZ Sample ID: **L66303-10**

Date Sampled: 11/06/07 14:30

Date Received: 11/14/07

Sample Matrix: Soil

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Acid Generation Potential (calc on Sulfur total)	M600/2-78-054 1.3	87			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	162			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Acid-Base Potential (calc on Sulfur total)	M600/2-78-054 1.3	75			t CaCO ₃ /Kt	1	5	12/06/07 16:44	calc
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	16.2	*		%	0.1	0.5	11/29/07 17:00	crl
pH, Saturated Paste	USDA No. 60 (21A)	7.2	*		units	0.1	0.1	11/29/07 6:59	bjl
Sulfur Forms	M600/2-78-054 3.2.4								
Sulfur Organic Residual		1.56	*		%	0.01	0.1	11/30/07 0:00	crl/lwt
Sulfur Pyritic Sulfide		1.19	*		%	0.01	0.1	11/30/07 0:00	crl/lwt
Sulfur Sulfate		0.04	B	*	%	0.01	0.1	11/30/07 0:00	crl/lwt
Sulfur Total		2.79		*	%	0.01	0.1	11/30/07 0:00	crl/lwt
Total Sulfur minus Sulfate		2.75		*	%	0.01	0.1	11/30/07 0:00	crl/lwt

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972							11/28/07 11:00	crl
Saturated Paste Extraction	USDA No. 60 (2)							11/28/07 17:44	bjl
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2							11/28/07 14:30	crl

**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit, typically 5 times the MDL.
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

<i>B</i>	Analyte concentration detected at a value between MDL and PQL.
<i>H</i>	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
<i>U</i>	Analyte was analyzed for but not detected at the indicated MDL

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
- (6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

McCulley, Frick and Gilman, Inc.

 ACZ Project ID: **L66303**

Project ID: 115820004

Neutralization Potential as CaCO₃

M600/2-78-054 3.2.3

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG237029													
WG237029LCSS	LCSS	11/29/07 10:21	PCN20880	100		103.03	%						
L66303-01DUP	DUP	11/29/07 11:33			20.7	20.41	%				1.4	20	

pH, Saturated Paste

USDA No. 60 (21A)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG237006													
L66303-07DUP	DUP	11/29/07 3:56			7.1	7.06	units				0.6	20	

Sulfur Organic Residual

M600/2-78-054 3.2.4

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG236984													
L66303-10DUP	DUP	11/30/07 11:00			1.56	1.45	%				7.3	20	

Sulfur Pyritic Sulfide

M600/2-78-054 3.2.4

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG236984													
L66303-10DUP	DUP	11/30/07 11:00			1.19	.95	%				22.4	20	RA

Sulfur Sulfate

M600/2-78-054 3.2.4

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG236984													
L66303-10DUP	DUP	11/30/07 11:00			.04	.46	%				168	20	RA

Sulfur Total

M600/2-78-054 3.2.4

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG236984													
WG236984PBS	PBS	11/28/07 14:45				U	%		-0.03	0.03			
L66303-10DUP	DUP	11/30/07 11:00			2.79	2.86	%				2.5	20	

Total Sulfur Minus Sulfate

M600/2-78-054 3.2.4

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG236984													
L66303-10DUP	DUP	11/30/07 11:00			2.75	2.4	%				13.6	20	

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66303**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L66303-01	WG236984	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L66303-02	WG236984	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L66303-03	WG236984	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L66303-04	WG236984	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L66303-05	WG236984	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L66303-06	WG236984	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L66303-07	WG236984	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L66303-08	WG236984	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L66303-09	WG236984	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L66303-10	WG236984	Sulfur Pyritic Sulfide	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfur Sulfate	M600/2-78-054 3.2.4	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66303**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
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McCulley, Frick and Gilman, Inc.

ACZ Project ID: **L66303**

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3
pH, Saturated Paste	USDA No. 60 (21A)
Sulfur Forms	M600/2-78-054 3.2.4

McCulley, Frick and Gilman, Inc.
 115820004

ACZ Project ID: L66303
 Date Received: 11/14/2007
 Received By: ksj
 Date Printed: 12/6/2007

Receipt Verification

- 1) Does this project require special handling procedures such as CLP protocol?
- 2) Are the custody seals on the cooler intact?
- 3) Are the custody seals on the sample containers intact?
- 4) Is there a Chain of Custody or other directive shipping papers present?
- 5) Is the Chain of Custody complete?
- 6) Is the Chain of Custody in agreement with the samples received?
- 7) Is there enough sample for all requested analyses?
- 8) Are all samples within holding times for requested analyses?
- 9) Were all sample containers received intact?
- 10) Are the temperature blanks present?
- 11) Are the trip blanks (VOA and/or Cyanide) present?
- 12) Are samples requiring no headspace, headspace free?
- 13) Do the samples that require a Foreign Soils Permit have one?

YES	NO	NA
		X
X		
		X
X		
X		
X		
X		
X		
X		
		X
		X
		X
		X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
NA4932		17.1	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

McCulley, Frick and Gilman, Inc.
115820004

ACZ Project ID: L66303
Date Received: 11/14/2007
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y < 2	YG < 2	B < 2	O < 2	T >12	N/A	RAD	ID
L66303-01	TP-1 2.5'									X		<input type="checkbox"/>
L66303-02	TP-2 2.5'									X		<input type="checkbox"/>
L66303-03	TP-3 2.5'									X		<input type="checkbox"/>
L66303-04	TP-4 3-4'									X		<input type="checkbox"/>
L66303-05	TP-7 2'									X		<input type="checkbox"/>
L66303-06	TP-12 1'-2'									X		<input type="checkbox"/>
L66303-07	TP-13 0-12"									X		<input type="checkbox"/>
L66303-08	TP-17 0-1'									X		<input type="checkbox"/>
L66303-09	TP-19 3.5'									X		<input type="checkbox"/>
L66303-10	TP-21 0-12"									X		<input type="checkbox"/>

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 μ R/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: ksj

ACZ Laboratories, Inc

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**CHAIN OF
CUSTODY**

Report to:

Name: **Daryl Longwell**
 Company: **Tetra Tech.**
 E-mail: **daryl.longwell@tetrtech.com**

Address: **4900 Pearl East Circle**
Suite 300 W, Boulder, CO 80301
 Telephone: **303-588-0902**

Copy of Report to:

Name: **Brianna Shanklin**
 Company: **Tetra Tech**

E-mail: **Brianna.Shanklin@tetrtech.com**
 Telephone: **303-772-5282**

Invoice to:

Name: **Daryl Longwell**
 Company: **Tetra Tech.**
 E-mail: **daryl.longwell@tetrtech.com**

Address: **4900 Pearl East Circle**
Suite 300 W Boulder CO 80301
 Telephone: **303-588-0902**

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?

 YES NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION**ANALYSES REQUESTED (attach list or use quote number)**Quote #: **ABA-AG-CREEK**Project/PO #: **1158520004**Reporting state for compliance testing: **Utah**Sampler's Name: **Jim Kienholz**

Are any samples NRC licensable material?

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	sample preparation	Acid Gen. Pot.	Acid Neut. Pot.	Acid-Base Pot.	Neutl. Pot. CaCO ₃	pH, saturated	Sulfur fums
TP-1 2.5'	11/6/07 8:05	SO	1							
TP-2 2.5'	11/6 9:05	SO	1							
TP-3 2.5'	11/6 8:40	SO	1							
TP-4 3-4'	11/6 10:15	SO	1							
TP-7 2'	11/6 12:45	SO	1							
TP-12 1-2'	11/5 13:45	SO	1							
TP-13 0-12"	11/5 11:45	SO	1							
TP-17 0-1'	11/5 15:30	SO	1							
TP-19 3.5'	11/6 10:45	SO	1							
TP-21 0-12"	11/6 14:30	SO	1							

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:

DATE:TIME

RECEIVED BY:

DATE:TIME

Jim Kieholz & Christy	11/7/07 7PM	Janna Simonsen	11/7/07 7PM
Janna Simonsen	11/12/07 5PM	FEDEX	11/12/07 5PM

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

**Analytical
Quote**

Brianna Shanklin
Rocky Mountain Consultants, Inc.
1900 South Sunset Street Suite 1-F
Longmont, CO 80501

Page 1 of 2
11/9/2007**Quote Number: ABA-AG-CREEK****Matrix:** Soil Acid Base Accounting - Silver Creek

Parameter	Method	Detection Limit	Cost/Sample
Misc.			
Electronic Data Deliverable			\$0.00
Quality Control Summary			\$0.00
Sample Preparation			
Air Dry at 34 Degrees C	USDA No. 1, 1972		\$4.50
Saturated Paste Extraction	USDA No. 60 (2)		\$12.60
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2		\$7.20
Soil Analysis			
Acid Generation Potential (calc on Sulfur t)	M600/2-78-054 1.3	Calculation	\$0.00
Acid Neutralization Potential (calc)	M600/2-78-054 1.3	Calculation	\$0.00
Acid-Base Potential (calc on Sulfur t)	M600/2-78-054 1.3	Calculation	\$0.00
Neutralization Potential as CaCO ₃	M600/2-78-054 3.2.3	0.1 %	\$10.80
pH, Saturated Paste	USDA No. 60 (21A)	0.1 units	\$6.30
Sulfur Forms	M600/2-78-054 3.2.4	0.01 %	\$48.60
Cost/Sample:			\$90.00

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Quote

Brianna Shanklin
Rocky Mountain Consultants, Inc.
1900 South Sunset Street Suite 1-F
Longmont, CO 80501

Page 2 of 2
11/9/2007

Quote Number: ABA-AG-CREEK

Pricing includes shipment of all standard sample containers and related paperwork by UPS Ground Service. Please allow three to five days for delivery when ordering containers. ACZ must be notified prior to receiving samples of all special requests such as electronic data deliverables or special reporting requirements. The client will be charged for special sample containers or express shipping and additional charges may apply for non-standard requests.

This quotation is valid for six months from the bid date and must be signed and returned to ACZ before project(s) is received. The authorized signature represents acceptance of the pricing as well as the general terms and conditions of ACZ Laboratories, Inc. Our general terms and conditions can be downloaded from our web site at <http://www.acz.com/eservices/download.html>.

All orders are subject to a minimum charge of \$100.00 and may incur a \$10.00/sample disposal fee for any samples deemed to be hazardous.

ACZ Representative (Authorized signature and date)

Client Representative (Authorized signature and date)

Jana Simonsen 11/12/07

APPENDIX E

GEOPHYSICAL SURVEY

APPENDIX F
WETLANDS DELINEATION REPORT